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2003-2004/18

## STATUS OF MILITARY SPACE ACTIVITIES

HEARING

BEFORE THE

STRATEGIC FORCES SUBCOMMITTEE

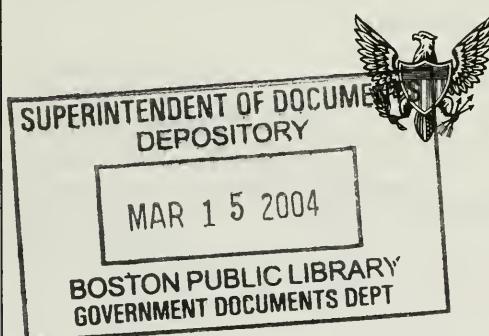
OF THE

COMMITTEE ON ARMED SERVICES  
HOUSE OF REPRESENTATIVES

ONE HUNDRED EIGHTH CONGRESS

FIRST SESSION

HEARING HELD  
MARCH 19, 2003



U.S. GOVERNMENT PRINTING OFFICE

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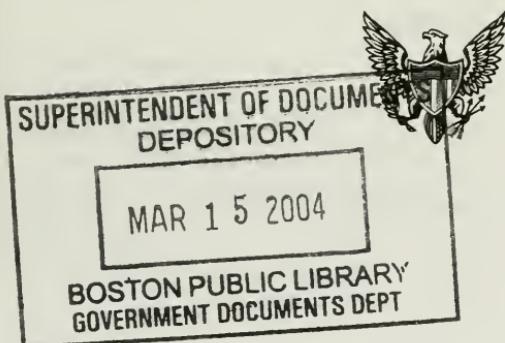
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## STATUS OF MILITARY SPACE ACTIVITIES

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HOUSE OF REPRESENTATIVES,  
COMMITTEE ON ARMED SERVICES,  
STRATEGIC FORCES SUBCOMMITTEE,  
*Washington, DC, Wednesday, March 19, 2003.*

The subcommittee met, pursuant to call, at 5:12 p.m., in room 2216, Rayburn House Office Building, Hon. Terry Everett (chairman of the subcommittee) presiding.

### OPENING STATEMENT OF HON. TERRY EVERETT, A REPRESENTATIVE FROM ALABAMA, CHAIRMAN, STRATEGIC FORCES SUBCOMMITTEE

Mr. EVERETT. The hearing will come to order. We meet today to receive testimony on Department of Defense (DOD) space programs and the fiscal year 2004 budget request for space activities. I want to welcome Under Secretary Peter Teets and also thank you for that earlier briefing. Secretary Teets is testifying today as the head of national security space programs.

I also want to welcome, seated behind Secretary Teets, the Service Space Program heads: For the Army, Lieutenant General Joseph Cosumano Jr., Commander, Space and Missile Defense Command; the Navy, Vice Admiral Richard Mayo, Commander, Naval Network Warfare Command; representing the Air Force, Lieutenant General Brian A. Arnold, Commander, Space and Missile Systems Center, Air Force Space Command; and finally Major General Kevin Kuklok, Assistant Deputy Commandant of the Marine Corps, for Plans, Policy and Operations.

Following Secretary Teets' remarks, I invite you to join him at the witness table as committee members ask questions. We have a great deal of ground to cover today, and I want to allow each of our members as great an opportunity as possible to ask questions, so I will be brief.

Likewise, I would ask you, Mr. Secretary, to be brief with your prepared remarks. The entirety of your written statement will be entered into the record.

Under Secretary Teets is the first person to serve as overall head of national security space programs. Consolidation of space activities under a single executive agent was a strong recommendation of the Space Commission, otherwise known as the Rumsfeld Commission for its able leader, our current Secretary of Defense Donald Rumsfeld.

On the one hand, the Secretary oversees an area of technology that is rapidly growing in importance, and on the other hand, he has inherited many space programs that have experienced cost growth and schedule delays. The secretary also faces the institu-

tional hurdle of better integrating military and intelligence community space activities, which promises to benefit both user communities, as well as provide more value to the taxpayer.

Further, he faces the difficulty of maintaining assured access to space while transitioning from legacy space boosters to the new family of Evolved Expendable Launch Vehicles (EELV) during a period when reduced commercial launches place added financial pressures on both suppliers.

Finally, another challenge, highlighted almost daily in the press, is the planned transition from existing space-based communication systems to a new transformational communications system based on laser interconnection. That system is to provide the increased information handling capability that our future forces require.

I would like to recognize my good friend and our distinguished ranking member, Mr. Reyes, for any comments he might have.

[The prepared statement of Mr. Everett can be found in the Appendix on page 23.]

#### **STATEMENT OF HON. SILVESTRE REYES, A REPRESENTATIVE FROM TEXAS, RANKING MEMBER, STRATEGIC FORCES SUB-COMMITTEE**

Mr. REYES. Thank you, Mr. Chairman. I join you in welcoming our distinguished witnesses, in particular, Under Secretary of the Air Force Teets. I also appreciate that the top military officers on space matters from each of our services have been able to join us here today. I know that you will greatly add to today's discussion.

This important hearing is being held at this hour in the afternoon due to the committee's tight scheduling constraints, so I intend to keep my remarks as brief as possible.

Mr. Chairman, as Mr. Teets notes in his written testimony, space assets have become vital to our war fighters. Our command, control, and communication systems depend on them. They provide our warriors in the field, in the air, and on the seas with vital intelligence on a real-time or close to real-time basis.

They are also important to the performance of our weapons. The newest work horse of our munitions, the Joint Direct Attack Munition (JDAM), derives its accuracy from our U.S. space assets.

As important as space and our assets in space have become to our military, our space programs have not received sufficient attention, I believe, from Congress. Many members, even on this committee, are only vaguely aware of our space missions, capabilities, and our future plans.

My distinguished colleague, Chairman Everett, and I have had a unique opportunity to focus on these issues through our work on the Permanent Select Committee on Intelligence (HPSCI). I am personally very excited to be able to continue this work through this newly established subcommittee.

I believe that we have an opportunity to focus on our military space programs in a way that the committee has not been able to in the past. I think that this subcommittee will have a valuable role in bringing needed visibility and understanding of our military space programs to Congress at large.

I also know that our witnesses will be focusing on the 2004 budget as requested, and I look forward to that review and that discus-

sion as well. However, I also hope that this hearing will be the first of many where we discuss broader issues such as what is the ultimate goal of our military space program, what do we mean by such terms as space control capabilities and assured access to space, how are other militaries using space, and what dangers does this represent to our country?

In addition, as Mr. Teets acknowledges in his written testimony, several of our space programs have faced large budget overruns and severe schedule slippages. One of the eight priorities that he mentions that have shaped the 2004 budget request is to get space acquisition programs back on track. I look forward to hearing what we are doing to accomplish this goal, and, as importantly, what challenges remain for these kinds of programs.

Finally, the Columbia tragedy has forced Congress to review and evaluate NASA (National Aeronautics and Space Administration). I hope that Mr. Teets can touch on what lessons DOD can draw from the Columbia tragedy. Moreover, I believe it would be useful to hear from him his thoughts on how DOD interacts both with NASA and commercial space interests and what room for improvement exists among those relationships.

Mr. Chairman, I thank you for calling this very important hearing. We have much ground to cover, so I yield back the balance of my time.

[The prepared statement of Mr. Reyes can be found in the Appendix on page 27.]

Mr. EVERETT. Thank you, Mr. Reyes.

I would like to remind members that the classified matters discussed in the previous members' meeting cannot be brought up in this hearing.

Secretary Teets, I look forward to your testimony.

#### **STATEMENT OF HON. PETER B. TEETS, UNDER SECRETARY OF THE AIR FORCE**

Secretary TEETS. Thank you very much, Mr. Chairman. It is an honor to be here, and I am particularly honored to be here in the presence of these distinguished military service leaders that you so kindly introduced. I have worked closely with these gentlemen over the course of the last 15 months, and I believe that that underscores really the importance that we place in jointness as we approach the problems and solve the problems that are associated with our national security space systems.

While the Air Force has, as you said, been designated as DOD's executive agent for space and as I have been given milestone decision authority on acquisition programs, I also serve as the director of the NRO (National Reconnaissance Office), as you know. And yet I must say that there is no question about the fact that all military services make extensive use of our space assets, and it is important for every military service to join together in a way that allows knowledgeable people to be brought to bear in any war fighting efforts that we take on.

As you know, of course, our space systems today are more important to our ability to fight and win military conflicts than they ever have been in the past. And so it is appropriate that we have joined together in a way that allows us to understand the unique require-

ments of each of the services and at the same time provide the kind of economies of scale and efficiencies that can result from a single service having executive agency status.

As it relates to the President's 2004 budget, I would tell you that we have significantly increased the budget request in 2004 from 2003, and, as a matter of fact, one of the things that my office does is put together a virtual MFP (Major Force Program). And if I compare the virtual MFP from fiscal year 2003 to fiscal year 2004, I will see an increase of about 18 percent in terms of growth.

Over the course of this last 15 months, we have spent a lot of time trying to implement properly the recommendations that came from the Rumsfeld Commission activity, and I think we have done a good job of making progress. And yet I would also say that there is much left to be done, and we have some challenges ahead of us, but I think we are performing well as a team together, and we communicate well and we communicate frequently.

I look forward very much to the opportunity to continue that partnership in coming weeks and months, and as it relates to today's activities, I would very much look forward to answering questions that you or other members might have and, with your permission, would ask that the military service leaders join me at the table here.

[The prepared statement of Secretary Teets can be found in the Appendix on page 30.]

Mr. EVERETT. That would be a good prospect.

Secretary TEETS. Thank you very much, sir.

Mr. EVERETT. Mr. Secretary, we have had, as you know, cost overruns in some of these programs for some time. What specific steps have you taken to ensure that the space acquisition programs are based on good, rapid, and independent cost analysis?

Secretary TEETS. Mr. Chairman, as you probably know, shortly after I was sworn in and took the job of being Under Secretary of the Air Force, one of the major Air Force space programs was experiencing significant cost growth and schedule delay, a program known as Space-Based Infrared System High, (SBIRS High). And I spent a considerable amount of time during the early months of my assignment in trying to understand the root cause of that difficulty and bring to bear a process improvement that would avoid having those kinds of problems in future activities going downstream.

What I found, really, was that the SBIRS High program had a number of unusual, innovative kinds of clauses that were built into the contract, that the SBIRS development program was taking place in an environment in which there was perhaps a shortage of good solid systems engineering talent, that the contract that was in place between the Air Force and the contractor, Lockheed-Martin, had some significant flaws.

Because that program had breached the Nunn-McCurdy limits, it was necessary for us to take a hard look at alternatives. So we studied what various alternatives were open to us, and at the same time we studied the potential of restructuring the SBIRS High contract between the Air Force and contractor, Lockheed-Martin, in a way that would give us high confidence that we could perform and achieve going forward, achieve our objectives.

I am pleased to say that that contract restructuring was basically accomplished last spring. It involved some extremely high energy work with not only the contractor, but with the government program office that was running it as well.

I think we have made great progress in restructuring the government program office under Colonel Mark Borkowski, who reports directly to General Arnold, and then we also experienced significant change at the contractor's facility. With additional resources brought in to shore up systems engineering, with some strong changes in the contract, we were successfully able to restructure that contract and put us on a course that we could properly execute. I believe that is in place now, and we are moving ahead well.

The other thing we did over the course of the year was we set up what is called a Defense Space Acquisition Board process. This is a process that emphasizes independent cost estimates and independent cost estimating excellence.

What we do is also involve representatives from all of the services, representatives from the Office of the Secretary of Defense (OSD), and have an opportunity to review carefully progress in programs before we pass certain key milestone dates. When we do that, we review the independent cost estimates, and we make certain that we have a way forward with the necessary resources in order to properly execute the program.

One observation I would make is that we have been classically trying to execute these high-technology, difficult programs to execute—we have been trying to do it with virtually no management reserve. I would maintain to you that it is absolutely necessary for any program manager in charge of one of these high-tech development programs to have discretionary resources available to apply to problems as they arise in the development program.

So we have been working hard in this Defense Space Acquisition Board process of trying to find ways to create some discretionary reserve for all of our program managers, and we are in the process of building on that.

Mr. EVERETT. I see that my time is going to expire. We will have a second and third and fourth round if we need to.

Secretary TEETS. Yes, sir. I know I took a long time to answer that question, sir.

Mr. EVERETT. No, because the answer was very important. As you well know, money is important in this program, and we have got a lot of things to do with maybe not as much money, in my estimation, as we might need.

Mr. Reyes.

Mr. REYES. Thank you, Mr. Chairman. I think the first thing I want to do is perhaps refer back to some of the questions I had in my opening statement, and I will just rephrase the three of them.

The first one deals with what is the ultimate goal of our military space program. The second one is what do we mean by such terms as space controlled capabilities and assured access to space. And what are other militaries using space for and what are the dangers that this represents to our country?

Secretary TEETS. I will take a crack at the first one, and we may want to hear from some of the other people here on the panel with regard to the ultimate goal for military support or for military

space, and it is the word, support. We think of ourselves as being able to provide intelligence, surveillance, reconnaissance capability, unmatched in any medium other than space. We think of ourselves as being able to provide rapid communications. We can provide weather information.

We are an enabling capability that allows us to efficiently and effectively conduct military operations on a global scale. And our goal is to make certain that we maintain and even increase the asymmetric advantage that our military forces use or enjoy from the use of space.

With regard to the terminology of space control and assured access that you asked about, I would say that space control is terminology that applies to being able to, first, have a knowledge of what objects are in space. You cannot control what you do not see or know or understand, and so, therefore, one of the things we need to do is improve our situation of awareness of what is in space.

Second, I think space control involves an effort that must be undertaken to allow us to be knowledgeable if we are under attack. We oftentimes have, I will say, hiccups or glitches that occur on our space craft, and, quite frankly, if we were under attack, we might well today decide that it was another glitch as opposed to an attack. So we need to develop some technology that will tell us when we are under attack.

We need to develop some defensive capability, that is to say, perhaps some maneuver capability, perhaps some shielding from radiation. There are various kinds of defensive counter space capabilities that are under study.

And then, last, we need to be thinking also about offensive counter space. Our space assets are enormously valuable, and the time may well come when we decide that we must take actions that could preclude an adversary from their use of that high ground. So space control refers to that entire range of activity in space.

As it relates to assured access, assured access simply means that we want to know that we can deliver these important assets into orbit in space. And if we have a failure of a certain rocket, we want to be able to be resilient from that failure, that is to say, not have to stand down and stop all space launch activity for months or years at a time. That is what I mean when I talk about assured access to space.

As it relates to other military forces, clearly, we have a growing capability from China. You have undoubtedly read about it in the newspapers. They hope to launch a man into orbit yet this year. We have seen a lot of capability in terms of space launch capability being developed in China, and they have an aggressive overall space program.

Russia, of course, continues to have an active space program as well. I think today, it is also possible that we could be attacked from the ground with some of our space assets. So I would say that there is a growing danger from other adversaries developing capabilities that could tend to threaten our space capabilities.

General Bob Taylor, who is the national security space integration lead, has just recently completed a vulnerability study. It is a very detailed study, and it is a worthy one. We have classified that study in terms of the results of it, because we do not want to pub-

lish what our vulnerabilities are. But, obviously, if you all are interested in hearing some of the results of that vulnerability study, I know General Taylor would be pleased to brief them to you.

Mr. REYES. Thank you.

Mr. Chairman, I think that would be a good idea to get that.

Mr. EVERETT. I think so, too. I think it would be a good one.

Mr. FRANKS.

Mr. FRANKS. Mr. Chairman, I will just pass for the moment.

Mr. EVERETT. Mr. Meek.

Mr. MEEK. I will pass also, Mr. Chairman.

Mr. EVERETT. Mr. Ryan.

Mr. RYAN. It is good to see you again. I am sorry we did not finish up last time.

I missed a little bit at the beginning, so can you talk a little bit about the evolved expendable launch vehicle? I do not know if you have talked about that much yet or not.

Secretary TEETS. I have not talked about it an awful lot, and this would be a great opportunity, if you would permit it, for General Arnold—

Mr. RYAN. Sure.

Secretary TEETS [continuing]. To get a word in edgewise. It turns out that the Evolved Expendable Launch Vehicle, EELV, is a program that General Arnold, the commander of the Space and Missile Center and the program executive officer of space for Air Force Space, is in charge of.

**STATEMENT OF LT. GEN. BRIAN A. ARNOLD, COMMANDER, SPACE AND MISSILE SYSTEMS CENTER, AIR FORCE SPACE COMMAND**

General ARNOLD. Good afternoon. The EELV program, or the Evolved Expendable Launch Vehicle program, was based on the notion that we would transition from the older heritage systems that we have been flying the satellites on for some years. We looked at a way to design a rocket that had less parts, was more reliable, and also reduced the cost to space.

We have a contract on now with both the Boeing Company, who builds the Delta 4, and the Lockheed-Martin Company that builds the Atlas 5. Those are the two new EELV systems.

They come in various varieties, from a medium lift all the way up to a heavy lift. The Boeing Company is on contract to build us a heavy demo later on this year.

Thus far, we have had three successful launches, and we have had one successful Atlas 5 launch back in August of 2002. Later last year, we had the first successful Delta 4 launch, and then just recently, we launched our first government launch, just Monday a week ago. It was a discus satellite—it put it right on orbit. So far, we have had great success with both the Boeing and the Lockheed-Martin programs.

Mr. RYAN. When you work with Boeing—and I am new to this committee and to Congress, too. So when you are working with a company like Boeing for certain technologies, and they are also working with China or Russia or whoever, what are the protections as far as the technology goes that would also have maybe some other applications? I mean, this is obviously military and commer-

cial and everything else. What are the protections that are included in some of that?

General ARNOLD. Any time we have a contract that deals with a foreign country, we go through SAFIA, i.e., the Secretary of the Air Force for International Affairs, to check to make sure that we are not violating any trade agreements, any protection agreements, if you will. With respect to the Boeing Company, we do not have that problem. With respect to the Titan or the Atlas 5 with Lockheed-Martin, they buy a Russian engine that is known as the RD-180.

So we do have some trade issues—not necessarily issues, but agreements, if you will. The two of note are basically the RD-180 being built in Russia. We would like to produce that here in this country, and so the Russians will pass us the information or the formula or the recipe to build that engine. We will give that to Pratt and Whitney here later this year. That is the first step.

The other step is to stockpile a certain number of the RD-180 engines here in this country just to give us sort of a risk protection, if you will. So that is really the only major international type of agreement with either one of those companies we have today with EELV.

Mr. RYAN. Thank you.

General ARNOLD. Yes, sir.

Mr. RYAN. We appreciate you coming.

Mr. EVERETT. Thank you, Mr. Ryan.

Admiral Mayo, both the Army and Air Force have a significant space presence in Colorado Springs. The Navy does not. Now that you have transferred defense to the Air Force, would it make sense from both a coordination and operation standpoint to mitigate a significant space presence in Colorado?

#### **STATEMENT OF VICE ADM. RICHARD MAYO, COMMANDER, NAVAL NETWORK WARFARE COMMAND**

Admiral MAYO. Mr. Chairman, thanks for the question. We have had a presence in Colorado Springs for some time, approximately about 10 Navy officers and civilians. Last October, when the new strategic command stood up, we began to draw down that contingent in Colorado Springs. Our intention is to continue a small cell in Colorado Springs to work with the other service components, but to also place a small cell in Omaha with the new strategic command.

But what we did, Mr. Chairman, in the aftermath of the Rumsfeld Commission report and actually in advance of the new strategic command—space is so important to the United States Navy that we are mainstreaming space. We are making it an operational capability. We have stood up our own new command in the Navy that works for the fleet in recognition of just how important the products we get from space are.

So we think we are well postured with the cell of people we have in Colorado Springs, the cell of people we are going to have in Omaha, with our commands in Dahlgren, Virginia, and our new command in Norfolk, Virginia, working for the fleet.

Mr. EVERETT. Thank you.

Mr. Secretary, the Secretary of Defense earmarked about \$1.3 billion to accelerate the procurement of satellite-based radars. The additional funds bring the total cost of the SBIRS program from fiscal year 2003 to fiscal year 2009 to about \$4.5 billion. Given the recent funding increases to the space-based radar program, has the program's desired capability been defined, and to what extent will the critical technologies be significantly mature to support the program?

Secretary TEETS. Thank you, Mr. Chairman. Space-based radar is an enormously important new program for military space, and I would also hasten to say that it certainly bridges into the intelligence community as well. This will be a partnership program that is developed using the full capability of both military space, using all services, by the way, and also the intelligence community. So it will be truly a national security space system that we will be developing.

Why? Well, because, for one thing, space-based radar has an ability to provide ground mobile target indications from space. This gives our war fighters an enormous advantage as they look at moving targets and track moving targets on what we hope to be a persistent, virtually constant basis.

In addition, space-based radar gives us an opportunity to do synthetic aperture radar imaging from space, and that is of enormous value to the intelligence community. So right now, we are in the process of forming a program office, doing formal architecture studies, developing an acquisition plan.

We recognize that it must have the full involvement of Army Space, Navy Space, Marine Corps Space, and, of course, Air Force Space, and, joined with the intelligence community, that makes for a lot of players. But we are going to put together a strong team that can bring this wonderful capability online.

With that, I would be happy to turn it over to any of the other folks on the panel here.

Mr. EVERETT. That would be good if we could hear from them.

**STATEMENT OF LT. GEN. JOSEPH COSUMANO JR.,  
COMMANDER, SPACE AND MISSILE DEFENSE COMMAND**

General COSUMANO. Thank you, sir. From the Army's perspective, as we look at the value of these future programs and the current programs, as we look at the ability to transform the Army—and, obviously, while we are at war, we are also transforming.

But as we look at that future Army we call our objective force, it is going to be a lighter Army, a more deployable Army, and space is one of those key enablers that will provide that Army with the ability to see first, understand first, act first, and finish decisively. So programs like the space-based radar, GPS-3 (Global Positioning System), the transformation communications study, and the programs that follow from that are key to this future Army that we talk about.

Mr. EVERETT. Let me—I am going to run over for just a minute, Mr. Reyes.

Mr. REYES. Go ahead.

Mr. EVERETT. Speaking about GPS-3, why was this delayed for so long—delayed for several years?

Secretary TEETS. I can give you a quick thumbnail of that. GPS-2 has been in progress for a good long time, and there are a number of GPS-2 satellites that are in the queue that have been acquired and bought. And it turns out that our GPS satellites are lasting a little longer than we thought they would last.

We have got an improvement program under way on GPS-2 called GPS-2RM and then a further improvement called GPS-2F, and those contracts are under way. Now, what we need to do is look at a program which will get in synchronization to bring GPS-3, an even more improved satellite system, into play at a point in time when we need to replenish the constellation.

What we have determined is that it would be timely to replace GPS, or to have the GPS-3 replacement satellites in the 2012 time-frame. Now, we had funds from the fiscal year 2003 budget that would allow us to do initial design work, some study work with some industrial counterparts, and put in place a procurement that would satisfy this objective of having a first launch capability in 2012.

As we looked at the situation as it relates to anti-jam capability, we have decided to take a look at whether it would be possible for us to accelerate this GPS-3 capability, because it does have strong anti-jam capability.

So we are in the process right now of reexamining our GPS-3 acquisition strategy, and I am in virtually weekly dialog with General Arnold and the GPS joint program office headquartered out in Los Angeles on this very subject of what is the smart way ahead. If we determine that we can wisely and for good reason accelerate that 2012 launch, then we will modify our acquisition plans accordingly.

Mr. EVERETT. Thank you.

Admiral, I kind of interrupted what you were going to say, I think, on the previous question. But we were talking about GPS-3, and since it was brought up, I wanted to ask a question. Would you continue on the previous question?

Admiral MAYO. Thank you, Mr. Chairman. I get excited about space. We have 306 ships in the Navy, 217 today are under way, most of them deployed. So well over two-thirds of our Navy is at sea.

They get their messages from space. They know where they are from space. They know what their battle space looks like from space, and they get their targeting information from space. We are very, very critically dependent upon space, and we will need it even more in the future to do precision, fast, speedy combat action.

So I get excited about this. I pay a lot of attention to what is going on in the national space security world with Mr. Teets. We work closely with him. We need this more than ever, and I just cannot emphasize that enough.

Mr. EVERETT. General Arnold.

General ARNOLD. I will just comment briefly, Mr. Chairman, on your comment on the technology readiness for space-based radar. We are right now investing a lot of up-front money to make sure that the various aspects and subcomponents of the space-based radar are maturing at the right rate, so that later on in this dec-

ade, we can begin to integrate those systems and then build the entire system of systems, if you will.

So we are dedicating right now up-front this year and the next couple of years to make sure that we absolutely mature those technologies, for example, the electronic scan, the ray, the internal processing capabilities, so that we will be able to meet the objective of this fiscal year 2012 first launch. So I think we are on the right track there.

It also needs to start up-front with the right kinds of concept of operations, making sure we balance the requirements from both the intelligence community as well as the joint war fighters. In fact, my good friend, General Cosumano, has loaned me a couple of his Army Colonels out at our joint SPO (Special Project Office) out at Los Angeles to really build a joint and a national capability so that we can build this system and built it right so it meets all the needs of all of our customers out there, and this will be a real chore. It is not going to be easy, but I think we are on the right track.

With respect to GPS-3, we are fundamentally improving every time we build one of our space systems. Today, we are in the sustainment of our current GPS systems. We have got 27 good satellites on orbit. We just put GPS-2R Number 8 on orbit. We will put 2R Number 9 on orbit on the 31st of this month, and we will continue to do that.

We are also modernizing at the same time and we are transforming. In every case, as we go from one of the blocks, as Mr. Teets mentioned, from a 2R to a 2F or the Block 3, we increase the capability sometimes five and maybe tenfold in capability for the war fighter. And it is very important that we look at that and we develop that and push that technology along in the right path.

At the same time as we develop a new GPS Block 3, we need to make sure the users, our sailors, our Marine Corps, our Army, our Air Force, have the right kinds of receivers in order to take advantage of the updated GPS signal that we are giving them. We will be backward compatible, but backward compatibility equals backward capability.

So we need to make sure that we also fund what we call the user equipment at the same pace that we are bringing along the modernized GPS system. We are intending to do that, and we manage that, but the anti-jam capability for GPS is vital and we are really paying attention to that.

Mr. EVERETT. General Kuklok.

**STATEMENT OF MAJ. GEN. KEVIN KUKLOK, ASSISTANT DEPUTY COMMANDANT OF THE MARINE CORPS, FOR PLANS, POLICY AND OPERATIONS**

General KUKLOK. I would just echo the other three leads, and I think from the Marine Corps perspective, of course, GPS is of significant interest to the Marine Corps. I think the other piece that tends to get lost in the discussion is a lot of space assets and a lot of the locations are on the ground. A lot of the sites are on the ground, and because we are totally forward deployed along with the Navy and the Army, we are very dependent on all of that GPS

capability, and to date, the current upgrades to GPS have been more than adequate to meet our requirements.

And we believe, as Mr. Teets has outlined, as we move into the future, and as General Arnold has referenced, sometimes we get quantum leaps from these things. So we are getting quantum leaps in the interim. What we thought GPS-3 would bring us some years back, some of the 2-blocks are doing for us today, so we are very confident that that path is going to work for all of us.

Mr. EVERETT. Thank you all for your answers, and I apologize to the committee for running over, and we will go on with another round. But before I do that, let me also remind members again that anything that was discussed in the previous meeting cannot be discussed in this meeting.

Mr. Reyes.

Mr. REYES. Thank you, Mr. Chairman.

I was just curious about the new GPS-3—I am reminded that in Afghanistan, we had that incident where the individual changed batteries, and it reconfigured or defaulted to an erroneous GPS position, which led to faulty targeting. Does GPS-3 take care of that, or is that something that we still need to work on?

General ARNOLD. Sir, that is in reference to a handheld system that we deploy out to all of our service members, a plugger system, and when you disconnected the battery at that time and put it back in, it did reset in error. That was a procedure error. We have since corrected that. But that really has nothing to do with the updating of the GPS-3.

What GPS-3 basically will give us is—to get just a bit technical, if I could, for a second, it will give us what we call an L1, an L2, and an L5. An L5 is safety of flight, that you will be able to navigate around the world and actually eventually do approaches. The other two are just to give you precision accuracy, and it can give you timing and location, which are very, very important.

In addition to that, we are going to give you about a plus-20 db (decibels). The signal itself is very, very fragile and can be easily jammed, and our Defense Science Board (DSB) has told us that we need to increase the power approximately 20 decibels above the level that it has right now. And by doing that, then you can simply overcome jamming in the local area.

The other thing we are doing is building what is called a new signal structure in the M-code overlay. What that will allow us to do is, essentially, if you are being jammed on your frequency, if you have the M-code capability, you can jam right back without doing what is called fracture-sight, in other words, ruining the signal for yourself. So we are developing that capability.

In addition to those capabilities, we are also adding a new NAV WAR capability, and we could discuss that in another location. Those are the brand new capabilities we are adding to GPS-3. So it will be larger and certainly a tremendous capability over what we get today.

Mr. REYES. Thank you, General. I appreciate that explanation.

Maybe we can get back, Dr. Teets, to the issue of the Columbia tragedy, and I realize that the investigation is not over. But I am wondering, based on that, have you had a chance to think about it and draw some lessons from that? And fully realizing that DOD

interacts both with NASA and commercial space interests, are there areas where you feel there exists room for improvement in those relationships?

Secretary TEETS. Yes, sir. I have, on several occasions recently, spoken with NASA Administrator Sean O'Keefe, and we, obviously, in the Air Force are trying very hard to provide any support we can to NASA as they sort through this tragedy and then re-plot their future. I would say that one of the things we have done over the course of the last year is to reach out to NASA to reinvigorate the NASA-DOD partnership council.

I sit on a partnership council along with General Lord and Admiral Ellis and Sean O'Keefe and Ron Sega, the DDR&E (Director, Defense Research & Engineer) person at the Pentagon. We meet semi-annually—and we may increase the frequency of those meetings now—to really talk about what kinds of technology is developing versus what kinds of technology the DOD or the intelligence community is developing, and how can we better partner to leverage each other's technology developments.

I look forward to continuing that kind of an association. As I say, we may increase the frequency of those visits. We will be very interested in seeing what NASA's plan for the future is in the aftermath of the Columbia tragedy. Again, we are pleased to be able to partner with them in any way that can be helpful to them, and, similarly, if we can use some of the technology they are developing, we would want to do so.

Mr. REYES. Thank you.

Thank you, Mr. Chairman.

Mr. EVERETT. Mr. Franks.

Mr. FRANKS. Thank you, Mr. Chairman.

Mr. Secretary and gentlemen, I want to make sure that I do not touch on anything that is of a classified nature here, but you have mentioned a lot about the ability of the GPS-3 in terms of being protected from enemy jamming. What is the vulnerability of GPS-3 and some of our other satellite capabilities to the EMP (electro magnetic pulse)? I know it is something that probably anyone but freshmen are already pretty much familiar with. But as far as the electro magnetic pulse that perhaps a nuclear weapon set off by Korea or someone like that—what is the honest vulnerability there?

General ARNOLD. I will keep this unclassified, sir. It is a very good question. The GPS satellite is located at what we call Middle Earth Orbit, MEO orbit, and that is at about 11,000 nautical miles in orbit above the Earth.

By being at that altitude versus at what we call Low Earth Orbit, which means around roughly 400 to 600 nautical miles above the Earth, you are not quite as vulnerable, because you would have to have somebody that could insert some kind of a weapon, an atomic weapon—to have an EMP blast at 11,000 miles out is a little bit harder and more technically challenging than it would be at Low Earth Orbit, first of all.

But the GPS satellite is hardened because of the environment that it is at 11,000 miles. It is a much more stringent requirement that we have on that satellite, because you are in a radiation belt, if you will. And when you operate at MEO, Middle Earth Orbit, you

have to have the ability for that system to sustain that environment for quite some time, and the life span of our satellites at that orbit—GPSs are lasting now upwards of 10 and as much as 12 years. You can believe that.

So we take a lot of effort to make those RAD (Radiation Absorbed Dose) hardened, as we call it, radiation hardened. But it depends on the relative distance for the weapon that would go off and how close in proximity you were with your satellite, and that is about all I can say at this level with that, sir.

Mr. FRANKS. Let me—

Secretary TEETS. The jamming, yes, sir. With respect to jamming, right now, the signal itself is what we call about a minus-159 decibels. It is a very fragile signal.

What you do to overcome the jamming—we are talking about putting a spot beam on the satellite. And, essentially, if we knew we were in a jammed environment—and there are various techniques to determine that—then you would steer the beam over that location, say, a large area the size of one of our—a medium size state, and it would produce that additional power to overcome the jamming so you could still receive the signal, if you will.

Now, for our current systems, for example, the 2RM, as Mr. Teets mentioned, and the 2F, we are adding what is called flex power that will give us about a 6.9 db gain over what your current level is. And by doing that, you are actually gaining about five times in capability. So it does not sound like a lot, but you are really gaining an awful lot. Today, with the systems we have on today, we are using other techniques that I prefer not to go into right now.

Mr. FRANKS. Thank you very much. Let me, if it is all right, just ask one more question in a completely different vein.

Mr. Secretary, I know the joint strike fighter is something, I am told, that the Air Force, Navy, and a lot of folks are working together on. My question is how will this affect the present F-16 program? I know that—they tell me the F-16 will be in operation for maybe 10 or 12 years or longer. Can you tell me about how long you think this is going to take to begin to supplant the F-16 force?

Secretary TEETS. Sure. As you undoubtedly know, the joint strike fighter, the Air Force variant of it, is really designed to be the replacement for the F-16. As the development schedule unfolds for the F-35, joint strike fighter—and we have aging aircraft in our current fleet, and those aging aircraft will be retired and replaced with F-35s.

Of course, the development program is now very much under way. There are three variants, an Air Force variant to replace the F-16. There is a Marine Corps variant, which is vitally important to our Marine Corps forces.

And then, of course, the Navy variant will be carrier based. That program is synched up in a way that makes good sense for providing, first of all, capability for a very aging Harrier fleet in the Marine Corps, capability for a quite aging F-16 fleet in our United States Air Force, and then, of course, destined for naval service as well.

Mr. FRANKS. Thank you, Mr. Secretary.

Thank you, Mr. Chairman.

Mr. EVERETT. Good question.

Mr. Meek.

Mr. MEEK. Thank you, Mr. Chairman.

Mr. Secretary, I want to ask questions around—since we are talking about the 2004 budget, and, obviously, when we start moving in the direction of going to the floor—and the defenders of your recommendations and the department's recommendations would be the members of the Armed Services Committee and, obviously, other members of the Congress.

As we look at this GPS system—and we know that we have had some mishaps in the past—but definitely for the lives that it will save, because these are the questions that are before us right now as Americans—will son, daughter, mother, father return back to the states after we, obviously, engage war in Iraq and in other parts of the world.

I want to know what the department is doing as it relates to educating the American public on the efforts of our GPS system, number one, whether it be a web site, whether it be making information available to the media about how helpful it could be. It seems like we are on the right track. You all are trying to improve it constantly—I mean, it has this preventive maintenance look to it.

What are some of the things that you all are doing so that the American public—if you look at the whole armed services package or the budget, DOD budget, many ask questions—"Oh, goodness, spending all of that money on defense."

What does it actually do, and how are you all telling that to the American public as it relates to letting them know that the money is well spent to save American lives, because that is what I am hearing now. Loss of life is the number one concern of Americans and others around the world.

Secretary TEETS. Yes, sir. Thank you, Mr. Meek, for the question. I will take a quick stab at it, and then I will ask General Arnold to follow up as well with his thoughts.

You know, I think it is quite well publicized and quite widely known that GPS has really enabled a new way of fighting. And if this conflict in Iraq proceeds, I think it is going to become much more clear.

I can tell you that from our experience in Afghanistan, it is absolutely certain that we changed—fundamentally transformed the way some of our war fighting efforts were taking place. All of a sudden, using the GPS system, you could think of B-52s as being able to provide close air support, and precision guided weapons are enabled, really, by a GPS system.

Now, it may not be as well publicized as a fact as we would like it to be, but I think that in coming wartime kinds of activities, there is an opportunity for us to make certain that the American people do know that GPS is what is enabling this precision guided munitions activity. As it relates to the GPS system itself, of course, I think it is a remarkable situation where our Department of Defense is essentially providing a utility service to the world.

And, in America, there are a whole lot of people driving automobiles these days that are using GPS receivers, and there are other people that are hiking mountains and sailing ships and boats

and so forth that are using GPS receivers for navigation and timing.

It is true, though, that GPS is an all-pervasive utility. I mean, timing—bank teller machines are all running off GPS timing. It is a remarkable utility, and perhaps we should increase our efforts to make certain that the American people are aware that it is their defense budget or our defense budget which is enabling that capability.

Mr. MEEK. Mr. Secretary, I know you want to respond on that. I am familiar with the GPS, I am a fisherman, so I would not leave home without it.

But I would say this, especially as it relates to what is getting ready to happen right now. I think that is important. The people that I am talking to and who seem to be looking at DOD appropriations, they are looking at next year being a real belt-tightening experience as it relates to the defense budget.

And I am thinking of ways possibly for those that have angst with our position right now as it relates to war, as it relates to mainly the loss of life—this is a perfect time, not only for people in the uniform, but those of us that are wearing shirts and ties, to be able to share not only with the American public, but with other members of the Congress that they can find some comfort that every measure is being taken to save lives.

Now, I do not think—and, you know, obviously, there has been talk on the stock market about GPS companies that are doing well because of the conflict in Iraq, and that is not necessarily the question here. But I think this is a perfect opportunity.

I asked Secretary Rumsfeld when he came before us as it relates to what we just started last year with an Under Secretary for—I believe it was for intelligence there at DOD—are we really using that office to the best of our ability to save American lives and our coalition partners' lives? I think it is important that we share more of that.

You can turn on any cable station and hear more about what we think people do not know. But we should share that more with the American public, because that is what I am getting in my constituent calls from the district. They are saying they agree with us, what we are doing right now. They agree with—they know that it has to pass for us to get our young men and women out of the sand right now and off the water. Let's do it.

But I think it is important that we have to do a better job as it relates to sharing with the American public the stopguards and safeguards and all of the thought and action we are putting into trying to save those lives. So that is really where I am headed.

I think people understand the GPS—I am sorry, Mr. Chairman. I know I am going over, but I am coming in for a landing.

Mr. EVERETT. We look forward to it. [Laughter.]

Mr. REYES. We hope it is a safe one.

Mr. MEEK. Thank you very much. I believe I am—but I think, Mr. Chairman, just in closing, this is a very important point, and the secretary thought it was an important point as it relates to an intelligence secretary. You hear nothing about that office. You hear nothing—I mean, in the media. I know it is intelligence, but the

American people need to know that it is that kind of coordination at DOD, and they need to know more about our GPS capabilities.

Mr. EVERETT. Thank you, Mr. Meek.

Mr. Ryan, you look like you have a question.

Mr. RYAN. Yes, thank you, Mr. Chairman.

You were talking a little bit about the jamming, and I do not know if I completely understand it. The signals that you send out from the satellites can be jammed. How are they jammed?

General ARNOLD. Let me just basically explain—and, Mr. Ryan, that is a very good question. There is basically four ways to get at our satellites, go after the satellite itself, go after the uplink signal, the downlink signal, or the ground station that receives it.

In this case, the jamming we are talking about is a very—we will likely see as a small, handheld jammer or a small jammer, two watts to four watts in size, that would jam the downlink signal, the signal coming from the satellite to the receiver, either on the aircraft or on the ship or to a soldier in the field. That is the kind of jamming we are talking about. And because the signal is so fragile, it is very easy to jam, and I would have to go to a closed session to discuss it any further than that, sir.

Mr. RYAN. So you can jam the signal. Can you intercept the signal?

General ARNOLD. Your receiver is what intercepts that signal, that is correct. And so the market variety you have in your car is a receiver. It receives that signal. That is exactly right.

Mr. RYAN. So if you are signaling a ship to go to certain coordinates somewhere, can that be intercepted and the information looked at by the enemy?

General ARNOLD. There is a distinct difference here. The signal is omni broadcasting in a global nature, and we have a constellation currently of 27 satellites that are on orbit. Each one of those is sending down a signal. It is a NAV message is what it is, and it gives you a timing and a position and a velocity.

So your receiver picks that information up, whether it is on a ship—let's say Admiral Mayo is on a carrier. He receives that information, and then that translates that information into exactly where he is on the sea, and it will tell him where—the speed that he is traveling, and it will tell him, basically, here is north, south, east, and west relative to the position of the ship.

That information will come down to anybody that has a receiver anywhere in the world. So it is not as though he will broadcast that information to another ship. Now, in that process, if he had to say, "I am going to communicate with another ship," that signal is an RF (radio frequency) signal which likely could be picked up if it is not secure.

But the signal itself from GPS is merely broadcast around the world, and everybody that has a receiver can receive that. So it is not a consequence of being intercepted by somebody else and letting you know where I am at. Does that make sense?

Mr. RYAN. I think it did. I am going to have to think about that for a while. Thank you very much, and I am also impressed with the GPS and the advances you have made. It does not help my golf game out at all, just so you know. But it is a lot more fun to golf with the system, so thank you very much.

Thank you, Mr. Chairman.

Mr. EVERETT. Thank you. This is important stuff, and believe it or not, they are going to be answering different questions. We covered about four pages of questions, Mr. Secretary. I must congratulate you on getting to the point on a lot of these things and our service heads of our different space agencies. This is important stuff, and we appreciate the work you are doing and the time that you have spent with us here today.

I would also like to thank my members, Mr. Reyes, Mr. Franks, Mr. Meek, Mr. Ryan. You all had good questions, and they were to the point, and I appreciate the answers that were given.

Actually, I do need to say one more thing. There are some questions we will submit for the record, and I particularly would like to talk to you about personnel and how you are handling personnel since they are essential to the success of this program and the money that we are spending.

So thank you again, and this hearing is now adjourned.

[Whereupon, at 6:14 p.m., the subcommittee was adjourned.]

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## A P P E N D I X

MARCH 19, 2003

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**PREPARED STATEMENTS SUBMITTED FOR THE RECORD**

**MARCH 19, 2003**

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**Opening Statement**  
**The Honorable Terry Everett**  
**Chairman, Strategic Forces Subcommittee**

**Hearing on the Department of Defense Space Programs and**  
**the Fiscal Year 2004 Budget request for Space Activities**

The hearing will come to order.

The Strategic Forces Subcommittee meets today to receive testimony on Department of Defense space programs and the fiscal year 2004 budget request for space activities.

I want to welcome Under Secretary Peter Teets who is testifying today as the head of National Security Space Programs. I also want to welcome, seated behind Secretary Teets, the Service Space Program heads:

- For the Army, Lieutenant General Joseph Cosumano Jr., Commander, Space and Missile Defense Command;
- the Navy, Vice Admiral Richard Mayo, Commander, Naval Network Warfare Command;
- representing the Air Force, Lieutenant General Brian A. Arnold, Commander, Space and Missile Systems Center, Air Force Space Command;

- and finally Major General Kevin Kuklock, Assistant Deputy Commandant of the Marine Corps, for Plans, Policy and Operations.

Following Secretary Teets' remarks, I invite you to join him at the witness table as committee members ask questions.

We have a great deal of ground to cover today, and I want to allow each of our members as great an opportunity as possible to ask questions, so I will be brief. Likewise, I would ask you Mr. Secretary to be brief with your prepared remarks – the entirety of your written statement will be entered into the record.

Under Secretary Teets is the first person to serve as overall head of National Security Space Programs. Consolidation of space activities under a single executive agent was a strong recommendation of the Space Commission, otherwise known as the "Rumsfeld Commission" for its able leader, our current Secretary of Defense Donald Rumsfeld. On the one hand, the Secretary oversees an area of technology that is rapidly growing in importance, and on the other hand, he has inherited many space programs that have experienced cost growth and schedule delays.

The Secretary also faces the institutional hurdle of better integrating military and intelligence community space activities, which promises to benefit both user communities, as well as provide more value to the taxpayer.

Further, he faces the difficulty of maintaining assured access to space...while transitioning from legacy space boosters to the new family of Evolved Expendable Launch Vehicles during a period when reduced commercial launches place added financial pressures on both suppliers.

Finally another challenge, highlighted almost daily in the press, is the planned transition from existing space-based communication systems to a new transformational communications system based on laser interconnection. That system is to provide the increased information handling capability our future forces require.

Now I would like to recognize my friend and distinguished Ranking Member Mr. Reyes, for any comments he may have.

[Following Mr. Reyes remarks]

Thank you Mr. Reyes. Before we proceed I want to remind members that the classified matters discussed in the member's briefing may not be brought up in this hearing.

Secretary Teets, I look forward to your testimony.

[Following Secretary Teets' testimony]

Thank you Secretary Teets. At this point, before we proceed to questions, I invite our Service Space Program heads to join you at the witness table.

[Proceed with Q&A]

Thank you all for taking the time to be with us today. Your statements and comments will be very helpful as we consider the Administrations fiscal year 2004 budget request.

The hearing stands adjourned.

**Opening Statement of the Hon. Silvestre Reyes  
Ranking Democrat, HASC Strategic Subcommittee  
Hearing on the Fiscal Year 2004 Budget Request  
And the Status of Space Activities**

**March 19, 2003**

**Mr. Chairman, I join you in welcoming our distinguished witness, the Under Secretary of the Air Force, Mr. Teets. I also appreciate that the top military officers on space matters from each service could join us today. I know you will greatly add to today's discussion. This important hearing is being held at this hour in the afternoon due to the committee's tight scheduling constraints, so I will keep my remarks as brief as possible.**

**As Mr. Teets notes in his testimony, space assets have become vital to our warfighters. Our command, control, and communication systems depend on them. They provide our warriors in the field, in the air, and on the seas with vital intelligence on a real-time -- or close to real-time -- basis. They are also important to the performance of our weapons. The newest workhorse of our munitions, the JDAM, derives its accuracy from U.S. space assets.**

As important as space and our assets in space have become to our military, our space programs have not received sufficient attention from Congress. Many members, even on this committee, are only vaguely aware of our space missions, capabilities, and future plans. I believe this newly established subcommittee has an opportunity to focus on our military space programs in a way that the committee has not been able to do in the past. I think this subcommittee will have a valuable role in bringing needed visibility and understanding of our military space programs to the Congress at large.

I know our witnesses will be focusing on the 2004 budget request, and I look forward to that review and discussion. However, I also hope that this hearing will be the first of many where we discuss broader issues, such as:

- What is the ultimate goal of our military space program?
- What do we mean by such terms as “space control capabilities” and “assured access to space”?
- How are other militaries using space, and what dangers does that present to the United States?

In addition, as Mr. Teets acknowledges in his testimony, several of our space programs have faced large budget

**overruns and severe schedule slippages. One of the eight priorities that Mr. Teets says shaped the 2004 budget request is: "Get space acquisition programs on track." I look forward to hearing what we are doing to accomplish this goal, and as importantly, what challenges remain for these programs.**

**Finally, the Columbia tragedy has forced Congress to review and evaluate NASA. I hope Mr. Teets can touch what lessons DoD can draw from the Columbia tragedy. Moreover, I believe it would be useful to hear from Mr. Teets his thoughts on how DoD interacts both with NASA and commercial space interests, and what room for improvement exists among these relationships.**

**Mr. Chairman, I thank you for calling this important hearing. We have much ground to cover, so I yield back the balance of my time.**

DEPARTMENT OF THE AIR FORCE

## PRESENTATION TO THE ARMED SERVICES STRATEGIC SUBCOMMITTEE

## UNITED STATES HOUSE OF REPRESENTATIVES

**SUBJECT: Air Force Space Programs**

**STATEMENT OF: Mr. Peter B. Teets  
UNDER SECRETARY, UNITED STATES AIR FORCE**

19 March 2003

NOT FOR PUBLICATION UNTIL RELEASED  
BY THE ARMED SERVICES STRATEGIC SUBCOMMITTEE  
UNITED STATES HOUSE OF REPRESENTATIVES

## FINAL

**Congressional Hearing Testimony  
for the  
Under Secretary of the Air Force  
The Honorable Peter B. Teets**

## INTRODUCTION:

It is my distinct honor to appear before the Committee today representing the world's greatest air and space force, and to be joined by the service leads of our National Security Space activities: General Lance Lord, Commander of Air Force Space Command; Lieutenant General Joseph Cosumano, Jr., Commanding General of US Army Space and Missile Defense Command and Army Space Command; Vice Admiral Richard Mayo, Commander of Naval Network Warfare Command; and Major General Kevin Kuklok, Assistant Deputy Commandant for Plans, Policies, and Operations. Their appearance here, together, underscores the importance of jointness in our National Security Space efforts.

You have previously heard from the Secretary of the Air Force and the Chief of Staff about the state of affairs of the Air Force as a whole. The "Top 4" of the Air Force – the Secretary, the Chief of Staff, the Vice Chief and I – are of one mind regarding our collective vision of a total air and space force providing global reconnaissance and strike across the full spectrum of operations in the service of this great nation. Given the focus of this committee, and my role in overseeing National Security Space activities as Under Secretary of the Air Force and Director of the National Reconnaissance Office (NRO), I will concentrate my remarks today on the eight priorities I have set for our National Security Space efforts for 2003. These priorities serve to shape the FY04 budget for our space programs, and – as they are all important to our space efforts – they do not have any particular ranked order. They are (1) ensure mission success in space operations, (2) fully integrate space capabilities for warfighting and national intelligence, (3) get space

**FINAL**

1 acquisition programs on track, (4) pursue operationally responsive assured access to  
2 space, (5) develop a team of space professionals, (6) pursue innovative capabilities for  
3 national intelligence and defense priorities, (7) enhance space control capabilities, and (8)  
4 focus space science and technology resources and programs.

5

6 **SECTION 1—Ensure Mission Success in Space Operations:**

7 Our space assets now are more important to warfighters, more important to the  
8 intelligence community, and more important to our ability to win current and future  
9 conflicts, than they ever have been before. Space capabilities are integral to modern  
10 warfighting forces. They provide critical surveillance and reconnaissance information,  
11 especially over areas of high risk or denied access for airborne platforms. They provide  
12 weather and other space and earth-observation data, global communications, missile  
13 warning, precision navigation, and guidance to troops on the ground, ships at sea, aircraft  
14 in flight, and weapons en route to targets. All of these space capabilities enable the  
15 tremendous success our joint warfighters achieve during combat operations.

16 To support these critical national security activities, ensuring mission success in  
17 space operations is of vital importance—and we anticipate a very busy year for national  
18 security space operations. We have 12 national security space launches scheduled for  
19 2003, compared to only one conducted in 2002. In addition to activities at launch bases,  
20 this increased launch rate leads to a heightened state of readiness at our ground stations,  
21 additional initial on-orbit checkout and housekeeping functions, and greater challenges to  
22 integrate those 12 new spacecraft into existing constellations. These launch operations  
23 include actions to sustain military satellite communications with one Milstar and two  
24 Defense Satellite Communications Systems (DSCS) launches this year. The first of the  
25 two DSCS satellites was just launched last week on board a Delta 4 EELV. We

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1 conducted a successful launch of a GPS IIR in January. We have two more IIR launches  
2 scheduled in 2003, and summer 2004 we will launch the first modernized GPS IIR-M.  
3 This new IIR-M will add new civil and military capabilities and is the first step towards  
4 improving GPS services to both the military and civil users. We also have a projected  
5 launch for the Defense Meteorological Satellite Program (DMSP) this summer as well as  
6 a Defense Support Program (DSP) satellite early next year, and, in addition to these  
7 launch activities, we continue to actively modernize and upgrade our launch and test  
8 ranges on both coasts. Concurrent with all of these activities is the critical need to keep  
9 on-orbit capabilities at peak performance. All of these events are vital to national  
10 security, and we will make every effort to ensure their success.

11

12 **SECTION 2—Fully Integrate Space Capabilities for Warfighting and National  
13 Intelligence:**

14 There is a commonality between our intelligence collection activities and our  
15 warfighting needs. A good example is the Air Force's Space Based Infrared System  
16 High (SBIRS High) satellite in development, which will replace the veteran DSP  
17 platform. It will perform the missile early warning mission, and also provide extremely  
18 valuable additional capabilities. SBIRS High will have two very highly capable infrared  
19 sensors capable of collecting large amounts of information useful to the intelligence  
20 community. In addition, it will significantly contribute to the Theater Ballistic Missile  
21 warning mission.

22 There is also a significant amount of information our constellations of NRO  
23 satellites collect on a daily basis that is crucial to warfighting operations. We have made  
24 great progress over the decades in expanding the range of those exploiting these space  
25 capabilities from a small set of strategic users to multiple government agencies and

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1 virtually the entire warfighting force. But we need to do more. Our goals for improved  
2 integration include providing communications, environmental sensing, and precise  
3 position and timing information to support a "common operational picture" of the  
4 battlespace, and facilitating cross-platform command, control, and communications. One  
5 way we will accomplish this is through programs like the Combatant Commanders  
6 Integrated Command and Control (CCIC2S) Target System Architecture in Cheyenne  
7 Mountain, which will provide an integrated battle management system delivering a fused  
8 battlespace picture to strategic and theater decision-makers.

9

10 **SECTION 3—Get Space Acquisition Programs On Track**

11 Our goal is to create an acquisition process that is both credible and agile. We  
12 have made progress in this direction with our new 03-01 space acquisition policy, which I  
13 signed into interim guidance this month. This new process recognizes the inherent  
14 differences of space systems. It allows us to reduce our timeline, while maintaining the  
15 required depth of review. It enables us to manage risk by looking for challenges early on.  
16 It eliminates program management bureaucracy, giving our program managers the  
17 responsibility and the resources to manage their programs. We expect there will be some  
18 continuing risk in our programs. Our job is to manage those risks by giving our people  
19 the necessary tools and ability to do so.

20 One tool we can give them is a world-class independent cost estimation  
21 capability. Our vision is to form a National Security Space Cost Assessment Team to  
22 provide a useful, accurate and timely independent cost estimate with common  
23 methodology in support of space acquisition. The team would consist of experts  
24 knowledgeable on the unique challenges facing space programs. The Director of OSD

**FINAL**

1 CAIG and I are working together to accomplish this task. He has also agreed to lead the  
2 National Security Space Cost Estimating Team.

3 Another valuable resource to reduce program risk is management reserve. We  
4 want to give our program managers the flexibility to meet the unknown challenges that  
5 arise in virtually every program. Such resources are not intended to meet unforeseen  
6 requirements, but to address technical challenges. This will enable us to provide greater  
7 stability in our programs, reducing risk and increasing our ability to deliver on time and  
8 on budget. Further, a dedicated, fenced reserve does not just help one program -- it helps  
9 our entire portfolio of programs. Currently, we pull money from a stable program to  
10 solve problems in an unstable program, and then we ask for more money to fix the  
11 initially stable program. In other words, we will break one program just to fix another.  
12 This is not how a good business runs; we must make these changes or we will continue to  
13 experience delays, overruns, and instability in our acquisition programs.

14 We have been successful in getting our major space programs back on track. The  
15 SBIRS High program successfully completed its rebaselining in January 2003. In that  
16 program, stronger government oversight has replaced Total System Performance  
17 Responsibility (TSPR), and Earned Value Management System (EVMS) enhancements  
18 have combined industry best practices with increased program office supervision. I  
19 personally chair a quarterly meeting with General Lance Lord (AFSPC/CC) and company  
20 presidents, ensuring consistent leadership involvement in the program. We have  
21 introduced contract improvements to more effectively reward positive performance, and  
22 added numerous new incentives for effective management, systems engineering, timely  
23 delivery of capabilities, and cost performance. While challenges still remain, I have  
24 much more confidence in SBIRS High than I did a year ago.

25

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## 1 SECTION 4—Pursue Operationally Responsive Assured Access to Space:

2 Last year was a pivotal year for space launch -- both of our new Evolved  
3 Expendable Launch Vehicles (EELV), the Atlas family and the Delta family, had their  
4 first successful launches in 2002. While I am encouraged by their success, each of our  
5 launch providers is suffering due to the current weakness in the commercial launch  
6 marketplace. Since maintaining two launch providers is critical to assuring access to  
7 space for our national security programs, we will continue to grow our EELV capability  
8 for near term assured access. The government has four EELV launches scheduled for  
9 CY03. We have budgeted \$163.9M for assured access initiatives in FY04, \$538.8M  
10 across the FYDP, including (1) *infrastructure sustainment*, which covers facilities,  
11 critical skills, maintenance, leases and supplier readiness; (2) *critical component*  
12 *engineering*, which improves reliability of critical components from common suppliers or  
13 components that have been historically problem or risk areas, (3) *pre-post mission*  
14 *engineering*, which provides new capabilities tools or resources to increase effectiveness  
15 of EELV practices and processes, and (4) *RL-10 engine producibility*, which involves  
16 investment to increase the producibility and reliability of the RL-10 engine, common to  
17 both the Atlas V and Delta IV vehicles.

18 Our EELVs are the best expendable launch vehicles the world has ever seen, but  
19 they still lack the responsiveness necessary to ensure our ability to rapidly replenish  
20 critical on-orbit capabilities. Today we still talk about time on the launch pad in terms of  
21 weeks, perhaps months, to prepare a satellite for launch. If we intend to have  
22 operationally responsive assured access to space, we need to find ways to bring that cycle  
23 time from weeks and months down to hours and days. One way is to pursue simpler,  
24 lower-cost small expendable launch systems. Accordingly, we are pursuing \$24.4M for

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1      Operationally Responsive Spacelift in FY04, \$233.8M across the FYDP, and are  
2      planning a lower-cost responsive spacelift technology demonstrator in FY07.

3              The other aspect of operationally responsive assured access to space comes in the  
4      form of reusable spacecraft, or reusable launch systems. I believe the nation needs to  
5      embark on a course to an eventual fully reusable Single-Stage-to-Orbit launch capability.  
6      The capability may be a long way off, and there will certainly be intermediate steps, but  
7      we need to begin to chart the path now. I plan to engage NASA, the Defense Advanced  
8      Research Projects Agency, other DoD laboratories, and the broader space community in  
9      developing a technology roadmap to do just that. This roadmap will guide investing in a  
10     portfolio of research projects and technology demonstrations in propulsion, materials and  
11     structures, with increased funding beginning in FY05.

12

13      **SECTION 5—Develop a Team of Space Professionals:**

14              I know that General Lance Lord considers developing the space workforce a high  
15      priority item at Air Force Space Command, and he is putting the finishing touches right  
16      now on his space professional strategy. I am confident we will see some excellent ideas,  
17      plans, and resources brought to bear on this issue.

18              In the meantime, we have taken a number of steps within the Air Force to attract  
19      and retain top talent. We introduced a Critical Skills Retention Bonus for scientists and  
20      engineers, similar to the bonuses we offer pilots, to increase retention in those career  
21      fields. We are establishing new requirements for advanced education, including courses  
22      for all space professionals and advanced space training for specific mission areas. We  
23      are also using the Naval Postgraduate School and the Air Force Institute of Technology to  
24      build a joint program using the particular strengths of each school to allow space

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1 professionals to receive a graduate education spanning a broad spectrum of space  
2 activities.

3 I also recognize these efforts are not and must not be limited to just Air Force  
4 personnel. We will need space professionals in *all* services and agencies – and in our  
5 civilian and industry workforce – to exploit space effectively in the interests of national  
6 security. I will encourage the other services and agencies to join us as we begin to build  
7 this initial “space cadre.” In doing so, we will actively engage with all the services to  
8 meet their mission and development needs.

9

10 **SECTION 6—Pursue Innovative Capabilities for National Intelligence and Defense**

11 **Priorities:**

12 One focus of this priority is on the development of breakthrough technologies that  
13 would produce new sources and methods for collecting intelligence. Our goal is  
14 transparency – we want the ability to see everything and know everything, while  
15 simultaneously denying our adversaries both the ability to do the same, and the  
16 knowledge that such capabilities are being used against them. We want to always be one  
17 step, or more, ahead of our adversaries – to be first to see, first to understand, and first to  
18 act. To achieve this ambitious goal, we look to technological advances to preserve our  
19 asymmetric advantage in information superiority against the full spectrum of threats and  
20 adversaries.

21 In addition to the push for new sources and methods, we have two other very  
22 innovative, creative, technology-pushing initiatives underway. The first is the  
23 Transformational Communications Architecture (TCA). TCA will combine upcoming  
24 spaceborne communications systems (AEHF, Wideband Gapfiller Satellite) with future  
25 systems (Transformational Satellite, or T-SAT) that will leverage new technologies such

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1 as laser communications and internet-based protocols to dynamically distribute  
2 communications amongst users. The ultimate goal is to remove SATCOM bandwidth  
3 and access as constraints on the warfighter. We anticipate this new architecture will  
4 increase available bandwidth from 10 to 100 times existing capacity – all of which will  
5 be essential to persistent ISR such as Space Based Radar (SBR) and advanced Unmanned  
6 Aerial Vehicles (UAVs). The President's budget includes \$439M for TCA in FY04,  
7 \$12.5B across the FYDP, with a T-SAT first launch targeted for CY09/FY10.

8 The second initiative is the SBR program, which will give warfighters the ability  
9 to surveil as well as reconnoiter deep into denied areas, day or night. SBR will be part of  
10 a larger mix of air, space, and ground ISR assets, all of which together have the potential  
11 to revolutionize warfighter command and control. In the budget, the \$274.1M for SBR in  
12 FY04 continues technology risk reduction activities while completing concept definition,  
13 with \$4.4B across the FYDP in pursuit of a FY12 first launch.

14

15 **SECTION 7—Enhance Space Control Capabilities:**

16 I described earlier how our space systems give our warfighters and intelligence  
17 analysts a very significant capability advantage. There is little doubt in my mind that our  
18 potential adversaries have taken note of this, and that, in the future, our space capabilities  
19 may be threatened by them. We must prepare to protect our advantage in space by  
20 developing space control capabilities.

21 The first ingredient for successful control of space is *awareness* of the space  
22 environment: natural phenomena, spacecraft "traffic," and potential threats (whether  
23 natural or manmade) to our space systems. We have taken steps to increase our space  
24 situation awareness capabilities, including the standup of a Space Situation Awareness  
25 Integration Office in Air Force Space Command, and significant funding for space

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1 surveillance assets over the next five years. An example is our Space Based Space  
2 Surveillance (SBSS) satellite program, which will augment ground-based space  
3 surveillance capabilities. The first launch of SBSS is planned for FY06, accelerated four  
4 years earlier than in the FY03 PB. We have also budgeted \$134.8M for the Air Force  
5 Spacetrack modernization program in FY04, with \$1.5B over the FYDP.

6 Effective space control also requires *protection* of our space capabilities, a  
7 mission area we call Defensive Counterspace (DCS). An example of our efforts in this  
8 area is the Rapid Attack, Identification, Detection, and Reporting System (RAIDRS),  
9 planned for initial operational capability (IOC) in FY08. RAIDRS will enable detection,  
10 reporting, identification, location, and classification of attacks against valuable space  
11 assets.

12 Achieving effective space control also requires us to think about *denying* the high  
13 ground to our adversaries through Offensive Counterspace (OCS). With the integration  
14 of space capabilities across the spectrum of our own warfighting operations, we have  
15 been paving the road of 21st century warfare, and others, cognizant of the asymmetric  
16 advantages our space systems give us, will soon follow. We currently have two OCS  
17 projects underway. The first is the Counter Communication System (CCS), a capability  
18 intended to disrupt satellite-based communications used by an enemy for military C3, and  
19 scheduled for first delivery in FY04. The second is the Counter Surveillance  
20 Reconnaissance System (CSRS), intended to impair an enemy's ability to obtain  
21 targeting, battle damage assessment, and information by denying their use of satellite  
22 imagery with reversible, non-damaging effects. CSRS is currently in the initial design  
23 phase, with operational units scheduled by FY07. Our commitment to DCS and OCS is  
24 \$91.4M in FY04, and approximately \$635M over the FYDP.

25

**FINAL****1 SECTION 8—Focus Space Science and Technology Resources and Programs:**

2       If we are to truly transform our warfighting and intelligence operations, we must  
3 continue to invest in and focus our space Science and Technology (S&T) efforts. Much  
4 of what we have accomplished in National Security Space to date stems from past S&T  
5 investment and development. Sometimes apportioning resources to S&T development  
6 can be difficult—such development requires stable long-term investment and typically  
7 does not provide immediate benefits to current programs. But we remain committed to  
8 investing today for our future capabilities – we must push the technology envelope.

9       Investment alone will not ensure that the United States military and intelligence  
10 community has preeminent future space capabilities. We must improve our S&T  
11 planning to ensure we: (1) encourage an operational pull that conveys to the S&T  
12 community a clear vision of the capabilities we need for the future; (2) address the full  
13 spectrum of future needs in a balanced and well-thought out manner; and (3) determine  
14 ways to demonstrate and spin-off promising technologies to programs.

15       Another ingredient critical to effective S&T development is collaboration. We  
16 have a number of outstanding organizations contributing to space science and technology  
17 development, including the Air Force Research Laboratory, the Naval Research  
18 Laboratory, and the NRO's Advanced Science and Technology directorate. By bringing  
19 these organizations together, and working with other agencies such as DARPA and  
20 NASA, we can move forward faster without duplicating effort.

21

**22 CONCLUSION:**

23       Space capabilities are vital to the current and future warfighting force structure,  
24 and to our national intelligence collection efforts. They are inherently global and  
25 uniquely capable of supporting our global interests and responsibilities. Likewise, as the

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- 1 world changes, our ability to understand events, to shape security relationships, to project
- 2 power, and to deter and/or compel adversaries will increasingly depend on space. These
- 3 circumstances collectively present us all with a tremendous responsibility – a
- 4 responsibility to do the right thing for the future of space, and to ensure those critical
- 5 capabilities are there, and on-time. It is our commitment to effectively and decisively
- 6 deliver these capabilities for the good of the nation.

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**QUESTIONS AND ANSWERS SUBMITTED FOR THE  
RECORD**

**MARCH 19, 2003**

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## QUESTIONS SUBMITTED BY MR. EVERETT

Mr. EVERETT. What is the status of the effort by the National Security Space Architect to establish an integrated defense and intelligence architecture?

Secretary TEETS. We believe we are making good progress on this complex and difficult issue. In the last couple of years, the Space Architect, with the assistance of Department of Defense (DOD) and Intelligence Community (IC) stakeholders, has completed the Mission Information Management Architecture and the Integrated Spectral Architecture. Both are integrated defense and intelligence community architectures. The Mission Information Management Architecture effort resulted in two architectures: The Communications Architecture and the Information Management Architecture. The Architect is currently leading teams to develop an Integrated Intelligence, Surveillance, and Reconnaissance Architecture and a Space Situational Awareness Architecture. In all of these efforts, the DOD and IC have been represented and have provided their expertise, experience, and talent to produce quality results that both communities are supporting.

Mr. EVERETT. How is that architecture approved and impressed upon the acquisition process so that authorized programs produce systems that fit within the overall architecture?

Secretary TEETS. In response to the Space Commission recommendations, the Secretary of Defense (SecDef) directed the National Security Space Architect (NSSA) to provide architectures to DoD's Joint Requirements Oversight Council (JROC) for final evaluation and approval. The NSSA will also present architectures to the Intelligence Community's Mission Requirements Board (MRB). Implementing procedures for this new process are still in coordination, but several activities are underway towards this end.

- The most recently completed architecture, the Integrated Spectral Architecture, was presented to both the JROC and MRB and a transition plan for that architecture is currently being drafted.
- The Joint Staff is developing procedures for generating joint integrated architectures from joint operational concepts. Joint integrated architectures, although different in scope and time frame from national security space architectures, will guide development and acquisition of future joint capabilities. They will be influenced by national security space architectures.
- The National Reconnaissance Office and the DoD draft for national security space acquisition process both include provisions for architecture compliance.
- The NSSA Director advises me for DoD and Intelligence Community (IC) acquisition boards.

The SecDef also mandated an annual Space Program Assessment, which the Space Architect will lead. This capabilities-based assessment reviews DoD and IC programs, as proposed in their respective program and budget submissions, for compliance with approved architectures as well as defense and intelligence planning guidance, policies, and other similar directives. Selected findings and recommendations from all these efforts are submitted for inclusion, as appropriate, in defense and intelligence planning and programming guidance.

Mr. EVERETT. How will the Office of the Secretary of Defense oversee the, activities of the Air Force as the new executive agent for national security space?

Secretary TEETS. Currently, OSD staff are invited to the Defense Space Acquisition Boards (DSABs), and we report program progress to the OSD through Selective Acquisition Reports and Defense Acquisition Executive Summary reports. Furthermore, DoDD 5100.88, "DoD Executive Agent", provides that, "The OSD Principal Staff Assistants shall oversee the activities of DoD Executive Agents in their functional areas of responsibility." Once the DoD Directive on DoD Executive Agent for Space (DoDD 5100.89) is signed and promulgated, the Air Force will work with OSD Senior Principals to establish specific oversight mechanisms and reporting processes.

Mr. EVERETT. How are the equities of the various services being protected by the current organizational arrangement?

Secretary TEETS. Per draft DoDD 5100.89, the DoD Executive Agent for Space will integrate the needs and requirements of the DoD Components into space plans and major space program requirements documents. The draft Directive provides for full participation by the DoD Components in Executive Agent function to the maximum extent practicable in order to accomplish the mission and to fulfill Executive Agent responsibilities. In addition, the draft DoD Directive states that the Heads of the DoD Components, when receiving DoD Executive Agent support, shall assess, as required, DoD Executive Agent support for effectiveness and efficiency in meeting requirements and make appropriate recommendations for improvement.

Mr. EVERETT. Are the positions in the National Security Space Integration office that reports to the Under Secretary of the Air Force joint positions?

Secretary TEETS. The Office of National Security Space Integration is currently staffed by military and civilian space personnel from all the Services and the Intelligence Community. While the military positions are currently not joint billets, this office will continue to be staffed by all Services.

Mr. EVERETT. Realizing that major changes take time to be implemented, what is a reasonable amount of time to wait before assessing whether the new organization is as efficient and effective as it can be, and what are some indicators that should be considered in assessing the new arrangement?

Secretary TEETS. Although the proposed DoD Directive on the DoD Executive Agent for Space is pending final approval and signature, most Executive Agent functions are already underway, based on the Secretary of Defense's 8 May 2001 memo to Congress and his 18 October 2001 implementation guidance. Specific achievements to date include the new "Virtual" Space Major Force Program that defines the scope of National Security Space (NSS) programs. The first NSS Plan will be signed out shortly and will provide the services and intelligence agencies with programmatic advice and guidance. The second annual NSS Program Assessment was conducted in December 2002 and is a key benchmark in evaluating how successful the DoD and Intelligence agencies were in programming to meet the NSS Plan. Most recently, I approved a new national security space acquisition policy and my Defense Space Acquisition Board (DSAB) reviewed several space programs (e.g. GPS, MUOS, SBR).

Mr. EVERETT. To what extent has assigning the Air Force as executive agent for space diminished the role the other services had in space programs?

- For example, in view of the Executive Agent's responsibilities, the Navy plans to eliminate its Naval Space Command and the Army had similar plans to subsume its Space component within other areas.

Secretary TEETS. The assignment of the Under Secretary of the Air Force as DoD Executive Agent for Space will not diminish the role of the other services in space programs. Instead it will strengthen their roles as there will now be a means to focus DoD resources on integrated service requirements and priorities in order to minimize duplication and redundancy. Specifically, the heads of DoD components will also be tasked to:

- Submit space needs and requirements to the DoD Executive Agent for Space for integration into space plans and major space program requirements documents as well as associated acquisition programs prior to submitting requirements to the JROC.
- Develop and maintain a sufficient cadre of space-qualified personnel to support their Component in space planning, programming, acquisition, and operations. Support the DoD Executive Agent for Space with space cadre personnel to represent their Component in DoD-wide planning, programming, and acquisition activities.

Mr. EVERETT. What is the status of the national security space strategy that will guide the activities of the services and intelligence activities?

Secretary TEETS. The Under Secretary of the Air Force is leading a defense and intelligence community effort to develop a National Security Space Strategy. The initial draft strategy approach was reviewed by the National Security Space Stakeholders last summer (2002) and the current draft version of the strategy and operations concept is being studied by the Secretary of the Air Force and the Air Force Chief of Staff. Their objective is to produce a strategy that links and seamlessly integrates Space with the air, ground, sea and intelligence components of national security operations. The strategy is nearing completion. We plan to have the next version of the document ready for SecAF and CSAF review early this summer.

Mr. EVERETT. What is the status of the national space plan that will provide specifics on implementing the strategy?

Secretary TEETS. I expect to sign the National Security Space Plan soon. It will then be forwarded to OSD, the Services, and the intelligence agencies as a key-plan-

ning factor in preparation of the FY05 DoD Defense Planning Guidance, the Director, Central Intelligence (DCI) Guidance, the Service Program Objective Memorandum (POM) and Agency Intelligence POMs.

Mr. EVERETT. To what extent does the role of the national security space architect's office overlap with that of the Air Force as executive agent for space?

- Should the role of the national security space architect be moved to another group, such as the National Security Council, in order to take the objective lead in making the budget decisions on space programs for all services?

Secretary TEETS. The January 2001 Space Commission report recommended that the Under Secretary of the Air Force (USecAF)/Director National Reconnaissance Organization (DNRO) oversee the National Security Space Architect (NSSA). This was intended to enable the architecture function to more directly influence resource processes with emphasis on the Air Force and the NRO. I am pleased to report that we have taken steps to realign the NSSA under the USecAF and DNRO. The NSSA also supports me as the DoD Executive Agent for Space. Joint credit is now awarded for NSSA assignments. Along with the newly created Directorate for National Security Space Integration (NSSI), the NSSA will support me to ensure unity of effort across the defense and intelligence space communities. The combination of the NSSA's architectures and annual Program Assessment, along with the Strategy, Operations Concept, and Plan produced by NSSI, creates an integrated, not overlapping, management approach for all national security space programs. I believe the NSSA is properly positioned to most efficiently meet the architecture needs of the DoD components and intelligence agencies committed to preserving this important relationship.

Mr. EVERETT. The Space and Missile Systems Center was realigned under Air Force Space Command in response to the Space Commission recommendations. However, the organizations continue to operate in the same manner with the same personnel structure. After almost a year, to what extent has this realignment improved the management and oversight of space programs?

Secretary TEETS. In response to a Space Commission recommendation, the Air Force reorganized its field commands to consolidate the full range of space activities—from concept and development, to employment and sustainment of space forces—within the Air Force Space Command. To consolidate the acquisition and operations functions, the Air Force Space and Missile Systems Center became part of the Air Force Space Command on 1 October 2001. The consolidation of these functions has improved communications and exposed personnel to both acquisition and operations functions. In addition, we have developed processes to identify requirements jointly with the warfighters, manage the resources, make the hard trades, and quickly move through the decision process.

Mr. EVERETT. To what extent has the Air Force evaluated NRO's practices before determining to use them to acquire space capabilities?

Secretary TEETS. The Space Commission suggested, "The Department of Defense and Intelligence Community would benefit from the appointment of a single official within the Air Force with the authority for the acquisition of space systems for the Air Force and the National Reconnaissance Office (NRO) based on the "best practices" of each organization." To implement this, I have numerous Best Practice teams composed of subject matter experts from across the National Security Space enterprise chartered to identify and implement the best approaches found in any organization. These cross-Service and Agency teams utilized their experience to determine the merits and implementation impacts of specific space acquisition practices. Team implementation recommendations are thoroughly reviewed by all the relevant organizations.

One area thoroughly reviewed by a Best Practice team was the NRO acquisition process. I have incorporated many elements of the NRO acquisition process into the Defense Space Acquisition Board and the associated acquisition policy to streamline acquisition decision-making. We are currently realigning our staffs and organizations to implement this change. Another team, which is currently on going, is evaluating test and evaluation (T&E) processes to determine ways we can improve the assessment of our space systems throughout the procurement process. The T&E team is relying heavily on the T&E experience of the Services and Agencies, including the congressionally mandated Director of Operational Test and Evaluation and industry, to evaluate the applicability of proposed practices before determining to use them to acquire space capabilities.

Mr. EVERETT. What has the Department done to facilitate integration of space activities with the space activities undertaken by the intelligence community and those of other agencies?

Secretary TEETS. I have two organizations to facilitate integration of Department of Defense (DoD) space activities and Intelligence Community (IC) space activities: 1) the National Security Space Integration (NSSI) Directorate and 2) the National Security Space Architect (NSSA) Office. Both are staffed by military and civilian space professionals from all the Services and the IC. The NSSI's mission is to ensure "unity of effort" across all DoD and IC space activities by identifying and implementing value-added integration opportunities and best practices. The NSSI Directorate also assists me with efforts to integrate DoD and IC space activities with those of other agencies, such as National Aeronautics and Space Administration (NASA) and the Federal Aviation Administration (FAA). The NSSA's mission is to develop integrated long-range space architectures and assess DoD and IC programs against our strategic direction.

In the area of programmatic integration, we have created the Transformation Communication Office, whose mission is to ensure that we have communications compatibility across communities in the years ahead. The space-based radar program is also a combined IC-DoD effort. We are in the process of developing a single, national security space independent cost estimating process, and the new DoD Defense Space Acquisition Board (DSAB) process is modeled after the National Reconnaissance Organization's (NRO's) acquisition board process.

In terms of people and planning integration, the NRO and Air Force have been working closely on the Space Professional Strategy to meet the challenge of developing the right people to acquire, operate, and employ space capabilities. We are also working together on the National Security Space (NSS) Plan, the NSS Program Assessment, and the overall NSS operating concept.

Mr. EVERETT. What steps are planned for the future to ensure that U.S. assets in space are not vulnerable to attack from adversaries?

Secretary TEETS. The United States relies on space in many ways for our security and well-being. Our dependence on space, however, creates a potential vulnerability. As a nation, we must be prepared for a broad range of threats against ground facilities, communication links, as well as the satellites themselves. Our approach must be equally broad—encompassing both passive techniques to enhance survivability of space capabilities as well as active techniques to mitigate or, if necessary, negate those threats.

My staff recently completed a classified vulnerability study which will help us define how best to pursue improved protection. Anticipated areas of emphasis for the future will likely include transforming space surveillance capabilities to Space Situation Awareness (SSA) for complete, continuous awareness of all activities in/threats to space; developing Rapid Attack Identification, Detection and Reporting System (RAIDRS) addressing threat detection, identification, location/classification, and attack reporting as cornerstone to defensive counterspace. Additionally, we desire to improve our protective stance against threats in key areas: ground facilities, infrastructure, and personnel, which includes force protection and back-up command and control. Communication links such as radio frequency jamming detection, and jam resistance and satellites, as well as, enhanced radiation hardening and enhanced sensors will also be emphasized.

Mr. EVERETT. How does the Department intend to improve its relationship with the commercial satellite industry?

Secretary TEETS. I believe our relationship with the nation's satellite industry is good. As you know, all of the satellites we acquire for dedicated government use are built by this Nation's commercial satellite industry.

I assume, however that your question is really focused on the issue of the government using commercially owned and operated satellites to meet its needs. Before embarking on the acquisition of a new space system, we consider commercial off-the-shelf solutions to meet our needs. This type of analysis is typically done by our major commands and defense agencies, such as Air Force Space Command or the National Imagery and Mapping Agency (NIMA), as part of the Joint Staff defined Mission Needs Analysis process. When we decide to use a commercial satellite industry product, we aren't buying the satellite, just the product that commercial satellite provides. If the major command or agency determines that an existing commercial satellite capability does not satisfy the government's need, then I, as the DoD Space Milestone Decision Authority and/or as the Air Force Acquisition Executive for Space, have the responsibility to acquire space systems to provide the capabilities that commercial off-the-shelf systems cannot. When it is determined that commercial satellite systems can meet a need, such as commercial space-based imagery or communications, then the procurement of those commercially supplied products is the responsibility of other agencies such as NIMA or the Defense Information Systems Agency. The directors of those agencies would be better able to address your specific question on the use of the commercial satellite industry products.

My belief is that our use of commercial satellite products is growing and will continue to grow as those systems become more capable and prevalent.

Mr. EVERETT. What is the status of implementing the National Security Space Cost Assessment Team consisting of Air Force and OSD Cost Analysis Improvement Group (CAIG), and what role does the OSD CAIG have?

Secretary TEETS. The OSD CAIG has taken the lead in performing Independent Cost Analyses (ICAs) for DoD space Major Defense Acquisition Programs (MDAPs) coming before the Defense Space Acquisition Board (DSAB). Since 4 March, the CAIG has formed joint teams to conduct ICAs for the Navy's Mobile User Objective System (MUOS), the Space Based Radar (SBR) program, and for the Transformational Satellite Program, which is a component part of the Transformational Communications System. To date, Air Force and National Reconnaissance Organization (NRO) cost estimators have signed to help the CAIG, which is also actively seeking both Army and Navy participation for its ICAs.

Mr. EVERETT. Since space systems are software intensive but plagued with development problems, what key initiatives are being undertaken by the Air Force to reduce the risk in this area?

Secretary TEETS. On 21 March, the Office of the Secretary of Defense issued a memo providing Department-wide guidance on Section 804 of last year's authorization law. This requires each service to define and develop a software acquisition process improvement program and to report the status within 90 days. As a result, the Air Force Software Steering Group is currently developing the framework and identifying already existing resources for a centralized Air Force software acquisition process improvement program. For space programs specifically, the Space and Missile Systems Center is working with Carnegie Mellon University's Software Engineering Institute to modify the widely-used Capability Maturity Model Integration industry standard for evaluation of the maturity of software systems engineering development efforts at each of its program offices and contractors.

Mr. EVERETT. What is the status of efforts to begin to develop and manage space professional to build the professional space officer, enlisted, and civilian personnel the Department needs?

Secretary TEETS. We are working with all the Services and the National Reconnaissance Office to develop and manage space professionals. Air Force Space Command has been actively working on an Air Force Space Professional Strategy, in conjunction with the National Reconnaissance Office and the Air Staff. Gen. Lord, commander of Air Force Space Command, recently signed and forwarded the Air Force Space Professional Strategy to me. This strategy is based on the training, education and experience needed to build a team of space professionals across the Air Force. The Space Professional Strategy is inclusive of operators, acquirers, and mission support personnel, for our active duty, guard and reserves forces.

The Army, with the U.S. Army Space and Missile Defense Command (SMDC) as the proponent, recently formalized its doctrinal concepts for Space Operations in support of the Objective Force. These concepts outline the Service's essential tasks for Space Operations and how space support is provided to the Objective Force. In addition, the Army has established the Space Operations Officer Corps to address interim and Objective Force space cadre requirements. To that end, SMDC is developing a number of initiatives that will bring space literacy training to all members of the Army. The system has expanded the education process for Army space officers and developed joint space training opportunities with the Air Force. SMDC has taken the initial steps for developing the officer corps and is working on processes to identify, educate and train enlisted and civilian personnel.

The Department of the Navy has defined the Naval Space Cadre as a distinct body of space-related expertise integrated into multiple existing communities including Active Duty and Reserve Navy Officers, Navy Enlisted, Marine Corps personnel, and Navy Civilians. Based on an initial manpower assessment, over 700 naval officers have been identified as space cadre members. In addition, the Navy established a Space Cadre Advisor Office to provide focused management of space cadre members. The Navy is working closely with Headquarters, USMC, who will function as "advisors" for Marine Corps space cadre members.

Mr. EVERETT. What resources are being applied to these efforts?

Secretary TEETS. The Space Professional Development program is funded, with \$10M in FY04, \$12M in FY05, \$15M in FY06, \$16M in FY07, \$18M in FY08, and \$22M in FY09. Funding for the Naval Space Cadre will begin in FY05.

Mr. EVERETT. What efforts are being made to educate warfighters about space applications?

Secretary TEETS. Air Education Training Command (AETC) currently teaches the Inter-service Space Fundamentals course for Air Force, Army, Navy, Marines and other agencies covering space principles and applications. Air Force Space Com-

mand's (AFSPC's) Space Warfare Center teaches multiple courses covering space integration available to warfighters from all services. Finally, Air University's Intermediate and Senior Service Schools provide space modules in their curriculum on space applications. In addition, AFSPC working with AETC is in the process of developing courses for all space professionals that will cover areas of space and missile operations from concept to employment. Course sections will cover the integration of space into warfighting operations and in support of national security decision-making.

Navy currently operates two outstanding venues for the education of prospective space cadre members, the U.S. Naval Academy (multiple space-related science/engineering degree programs) and the Naval Postgraduate School (Space Operations and Space Engineering). The Naval Postgraduate School program is open to all services, including government civilians, and offers a world-class space education sufficient to meet Naval Space Cadre space graduate education requirements. The Naval War College core curricula includes a module on C4ISR which discusses space systems and their importance in naval and joint operations, as well as offering several space course electives. Navy is also working with Naval Education and Training Command (NETC) to integrate space courses into all enlisted and officer initial accession programs and required follow-on training. Changes to Marine Corps Professional Military Education curricula are also being drafted to ensure relevant space information is taught at all levels.

Mr. EVERETT. What is the justification for having a separate acquisition policy for space systems?

Secretary TEETS. Our use of a separate space acquisition policy is based on Space Commission recommendations, Secretary of Defense direction, and recognition of the unique acquisition characteristics of national security space systems. The 2001 Commission to Assess United States National Security Space Management and Organization, or the "Space Commission", recommended "appointment of a single official within the Air Force with authority for the acquisition of space systems for the Air Force and the National Reconnaissance Organization (NRO) based on the 'best practices' of each organization." In October 2001, the Secretary of Defense acted on this and other commission recommendations, directing delegation of space program Milestone Decision Authority to the Under Secretary of the Air Force, designation of said Under Secretary as NRO director, and Air Force/NRO implementation of each other's "best practices" for space research, development, acquisition and operations. In the process of identifying such practices, we noticed the NRO used an acquisition process tailored to typical space system characteristics, such as front-loaded life cycle costs. This process supported decisions similar in quality to those made under DoD 5000 documents, but with shorter associated timelines. Because of its advantages, we have since implemented this process in DoD space.

Mr. EVERETT. What percentage of the DoD and Air Force acquisition investment budgets will be governed by this new space policy?

Secretary TEETS. Approximately 80% of all funding included in the Space virtual Major Force Program will be governed by this policy in FY04 under my authority as the DoD Space Executive Agent and my roles as DoD Space Milestone Decision Authority and Air Force Acquisition Executive for space-related programs. This equates to approximately 13% of the total Air Force, and 5% of the total DoD investment budgets.

Mr. EVERETT. Why can't the Air Force use the new Defense Acquisition policy and tailor its application for space systems?

Secretary TEETS. In effect, we are. The policy we have written, National Security Space Acquisition Policy 03-01, falls under DoD Directive 5000.1 and will be used instead of DoD Instruction 5000.2. This policy is more ideal for space efforts due to similarities to the National Reconnaissance Organization (NRO) approach and tailoring for the unique aspects of space system acquisition, which include life-cycle cost profiles "front-loaded" with development and launch funding as well as smaller production lots for satellite efforts than non-space acquisition programs.

Mr. EVERETT. If the Air Force insists on having a separate acquisition policy for space systems, why does the new policy exclude specific knowledge deliverables to provide measurable criteria before assessing readiness to progress to the next phase of the acquisition process?

Secretary TEETS. The new space acquisition policy is under the authority of DoD Directive 5000.1, so it is not "separate" from the DoD acquisition process. "Knowledge deliverables" were driven by DoD Regulation 5000.2-R, which the Deputy Secretary of Defense canceled on October 30, 2002 as a mandatory compliance document when he published "interim guidance" for the DoD 5000 acquisition documentation series. The items contained within that document are now non-mandatory "guidance." The space acquisition policy will instead utilize independent teams

to assess program readiness to enter the next phase of acquisition. However, a primary focus of these assessments will be technology and knowledge readiness, and sections of DoD Regulation 5000.2-R that describe "knowledge deliverables" will guide our assessments and decision-making where appropriate.

Mr. EVERETT. If the Air Force does not include these knowledge deliverables, how does it plan to ensure product readiness as it moves through the acquisition process and avoid the cost, schedule, and quality problems that have persistently permeated past DoD acquisition programs?

Secretary TEETS. The new acquisition policy is based upon conducting independent reviews of National Security Space programs prior to granting approval to proceed from any acquisition phase to the next. At each decision point, a hand-picked Independent Program Assessment Team of non-program-affiliated subject matter experts will conduct an intense, focused review at program office and contractor facilities to examine program risk areas and readiness to proceed into the next acquisition phase. The team's work will include evaluation of technology maturity at the end of each acquisition phase and assessment of design maturity before entering into the build phase. These assessments will provide a firm foundation for sound acquisition decisions and problem prevention.

Mr. EVERETT. Are space capabilities now included in major wargames?

Secretary TEETS. Yes, in the Air Force's recent Global Engagement war game we partnered with both the National Reconnaissance Office and the Space Warfare Center's Schriever II Space Wargame to develop a robust space order of battle covering the length and breadth of future space roles and missions. All gamed systems were grounded in some level of fiscal reality as either funded acquisition programs or research efforts. The order of battle included combat support systems such as satellite communications, intelligence, surveillance, and reconnaissance, and navigation, positioning, and timing; space support functions such as advanced space lift systems, and future combat systems covering both space control and conventional force application through space. It also incorporated commercial space services available to both the US and potential adversaries. The Global Engagement campaign planning included the development of an integrated air and space campaign plan by the Joint Forces Air Component Command (JFACC) to support the Joint Force Commander's overall campaign.

In addition to looking at the integration of air and space power in Global Engagement, the Space Warfare Center hosted the Schriever II Space Wargame to look deeper into space issues in a joint campaign. Schriever II looked at additional trades for space capabilities that could be made in a fiscally constrained environment. They also developed a detailed set of future Rules of Engagement for the employment of space control and force application systems that was used in both Global Engagement and Schriever II.

We have also integrated these capabilities into the Army's Unified Quest 03 war game. In addition, we provide space expertise to all major service and joint war games.

Mr. EVERETT. How are space capabilities included in experiments?

Secretary TEETS. New and emerging space capabilities are a critical part of experiments. Four of the seven initiatives from the Joint Expeditionary Force Experiment (JEFX) 2002 either directly involved space capabilities or involved space assets. We continue to evolve space capabilities in experiments with the integration of space with air operations being a focus area in JEFX 04.

Mr. EVERETT. What are the Air Force's plans to improve space surveillance and the Navy Fence?

Secretary TEETS. The Air Force is not only improving space surveillance capabilities, but also transforming from space surveillance to Space Situation Awareness (SSA). Improvements include better coverage and timeliness for the overall Space Surveillance Network (SSN) through the Space-Based Space Surveillance system (SBSS) and completion of the Globus II radar program in Norway. The SBSS, accelerated in the FY04 Program Objective Memorandum (POM) to a CY06 launch for the SBSS Operations Pathfinder (OPF), will replace the current on-orbit capability. The extant SSN capabilities will be preserved through Service Life Extension Programs (SLEPs) for the Eglin phased array radar, Haystack radar, and Groundbased Electro-Optical Deep Space Surveillance system (GEODSS). In addition, improvements in characterization capabilities will be realized by the Orbital Deep Space Imager (ODSI), an FY04 new start with an estimated launch in FY12. Together, these systems provide a robust mix of space and ground based capabilities, mitigating risk, maximizing space surveillance, and transforming into SSA.

The Air Force plan for the Navy Fence has not yet been established. The Navy Space Surveillance System (NSSS) transfer from the Navy to the Air Force directed in the FY04 Program Decision Memorandum (PDM), includes two separate efforts—

the Alternate Space Control Center (ASCC), which provides functional backup to the primary Space Control Center (SSC) in the Cheyenne Mountain Operations Center (CMOC), and the Navy Space Surveillance Fence, a continuous wave radar functioning as a dedicated asset in the SSN. The FY04 PDM directed the Air Force and the National Reconnaissance Organization to provide a study to the Deputy SecDef on whether to upgrade the Fence radar or terminate it. The study is in coordination at Air Force Space Command with an expected delivery date of 2 May 2003. After the study is received, the Air Force will establish its formal position on the Fence and proceed with improvements if necessary.

Mr. EVERETT. Given the recent funding increase to the Space-Based Radar (SBR) program, has the programs desired capabilities been defined?

Secretary TEETS. Yes. Desired capabilities were defined by a Mission Need Statement approved in April 2002. SBR must be able to:

- Detect, monitor, locate, characterize, identify, track, and target surface objects, day or night and in all weather, worldwide
- Obtain persistent, responsive, synthetic aperture radar imagery supporting geospatial intelligence, target tracking, and terrestrial intelligence, surveillance, and reconnaissance
- Provide high-resolution terrain mapping

SBR will provide interoperability with existing and planned information architectures and dynamic responsiveness to deployed force needs while permitting effective operations against:

- Deep, denied access areas
- Terrain/environmental masking effects
- Camouflage, concealment and deception measures

These capabilities will complement those of existing airborne and terrestrial assets.

Mr. EVERETT. To what extent will the critical technologies be sufficiently mature to support the program?

Secretary TEETS. The key technologies in the Space Based Radar effort are electronically scanned arrays, on-board processors, signal processing algorithms, information management systems, and tracking hardware/software. The Joint Program Office is fostering rapid progress in these areas by managing five concept development contracts, three payload contracts, and additional contracted technology efforts at Air Force and university laboratories in the near term, thereby using the lever of competition to drive innovation. FY03 work has supported major progress to date in experimental efforts and laboratory component validation, building upon several years of array and processor development that began in 1999 as a part of the Discoverer II demonstration. FY04 funding will continue to mature these technologies to ensure achievement of required technical readiness levels by Preliminary Design Review in the FY06/FY07 timeframe.

Mr. EVERETT. Has DoD decided how data from the program will integrate with the Future Imagery Architecture and support the warfighter?

Secretary TEETS. DoD will integrate Future Imagery Architecture and Space Based Radar systems. The details of the integration are classified and can be provided under a separate cover.

Mr. EVERETT. To what extent is DoD confident that the cost and schedule estimates for SBIRS-High are realistic and executable?

Secretary TEETS. The Department is reasonably confident that the cost and schedule estimates are realistic and executable based on both Air Force and Office of the Secretary of Defense independent cost estimates. The recent delay in the delivery of the first Highly Elliptical Orbit (HEO) payload, HEO-1, is being handled within the program's funding based on the cost estimate developed during the Nunn-McCurdy certification review process. While this delay is unfortunate, the lessons learned from it are being incorporated in the HEO-2 and Geosynchronous Earth Orbit (GEO) satellite assembly, integration, and test. In addition, ongoing surveillance supplied by the Earned Value Management System's "headlight" metrics enables the program office to apply corrective actions early in response to cost and schedule issues.

Mr. EVERETT. Is the recent slip in the delivery of the HEO sensor indicative of future delays due to assembly, integration, and test problems?

Secretary TEETS. The recent experience with Highly Elliptical Orbit (HEO) HEO-1 anomalies during assembly and test have caused the program to investigate the risk areas in design and fabrication that occurred prior to the termination of the total system performance responsibility clause on the contract. The Air Force believes there may be some moderate challenges to the delivery of the HEO-2 payload

and/or Geosynchronous Earth Orbit (GEO) space segment, however these challenges are accommodated by schedule margin built into current planning.

Mr. EVERETT. With only one EELV launch pad at Vandenberg, what is the contingency plan for launching into polar orbit if the single contractor's launch pad is damaged or its launch vehicle must be grounded pending an accident investigation?

Secretary TEETS. Depending upon the extent of launch pad damage or duration of launch vehicle grounding, we would wait until the system is returned to flight. Otherwise, given the situation of national emergency, the majority of west coast missions can be launched from the east coast.

Mr. EVERETT. What is the current timetable for replacing the antiquated mainframe computers used at Vandenberg during launch operations?

Secretary TEETS. The Air Force is reviewing options to replace the Western Range (WR) flight safety system in FY04-FY06. Critical computers used during launch operations at Vandenberg AFB are part of the WR flight safety system, which uses a workstation/server network architecture, as opposed to mainframe computers. This system is fully functional, but spares are becoming limited and vendor support is diminishing. The WR uses mainframe computers for post flight data processing functions, which are not safety critical. These computers are sustainable for the next several years. When the replacement strategy for the WR flight safety system has been finalized, plans will be made to migrate post flight data processing functions from the mainframes in FY06 or later.

Mr. EVERETT. What risk mitigation plan does the Air Force have in dealing with a potential loss of any of the critical components of Vandenberg AFB's mainframe launch system?

Secretary TEETS. The Air Force is mitigating risk on the Western Range flight safety system in several ways. When the Air Force restructured the range modernization program it added sustainment funds to address the anticipated increase in component failures. Additionally, the Air Force is working immediate sparing and repair solutions for those components requiring the greatest sustainment attention to guarantee their functionality until a replacement flight safety system is operational.

Mr. EVERETT. What is the current timetable for completing modernization of the tracking stations used during launch operations on both the East and West Coast?

Secretary TEETS. The timetable for modernizing Eastern Range (ER) and Western Range (WR) tracking stations is FY04-FY08. During this period, the Air Force will modernize telemetry and selected radar assets. This will enable the Air Force to implement GPS-based tracking in FY08 on the ER and in FY09 on the WR. Implementation of GPS-based tracking will permit the Air Force to deactivate up to eleven ground radars between the ER and WR, while retained radars will be modernized according to the aforementioned timetable.

Mr. EVERETT. How much supplemental funding will be required to maintain two separate launch service providers through the balance of the decade?

Secretary TEETS. The Air Force and OSD are currently assessing the requirements, potential amounts and types of funding that may be required to maintain two separate Evolved Expendable Launch Vehicle (EELV) launch service providers through the balance of the decade.

Mr. EVERETT. How much will the conditions of the commercial space sector need to improve in order to avoid the government having to subsidize the two EELV contractors?

Secretary TEETS. The conditions of the commercial space sector continue to fluctuate. As a result, the Air Force will continually evaluate the commercial space sector to determine when additional funding is no longer required in order to maintain assured access.

Mr. EVERETT. What conditions will have to occur to cause the Air Force to consolidate all National Security launch requirements under one EELV contractor?

Secretary TEETS. The only way to achieve assured access to space with our existing capabilities is to avoid a single string to space by maintaining two launch providers. The EELV program is the next step in the spacelift evolution towards a true integrated responsive launch system of the future.

Mr. EVERETT. What are the expected impacts to the industrial base or launch infrastructure if and when a decision is made to have one contractor provide launch services for the military?

Secretary TEETS. The impacts to the industrial base or launch infrastructure of a single Evolved Expendable Launch Vehicle Program (EELV) provider program are expected to include a 50% reduction in the U.S. industrial base for medium and heavy space launch vehicles. The lack of competition would also reduce innovation for future improvements in EELV vehicles and eliminate the opportunity for price competition in the EELV program. Further, we expect the other contractor would

leave the space launch vehicle market, leaving only one contractor capable of the development and production of the next generation of space launch programs.

Mr. EVERETT. Both the Army and Air Force have a significant space presence located in Colorado Springs. The Navy does not. Now that you have transferred the "Fence" to the Air Force, would it make sense from both a coordination and operations standpoint to migrate a significant space presence to Colorado?

Admiral MAYO. Even before OSD directed the transfer to "Fence" funding to Air Force, Navy had initiated a review and reorganization of its space activities. Although the "Fence" processing is expected to be physically re-located at some point, other Navy space operations, to include satellite communications support, remain at their present location in Dahlgren, Virginia. Additionally, Navy had initiated movement of its network operations activities to Dahlgren prior to any Fence decisions.

The thrust of the Navy's reorganization of space is to more closely align space with fleet operations, to "mainstream" space into our evolving network centric operations. This is best done from fleet or Navy concentration areas. My headquarters is in Norfolk Virginia for this reason; my space and network operations are collocated with the Naval Surface Warfare Center and the Aegis Readiness and Training Center in Dahlgren.

Navy does maintain a small detachment in Colorado Springs to facilitate liaison with Army and Air Force on space issues.

### QUESTIONS SUBMITTED BY MR. REYES

Mr. REYES. Are the mission requirements for SBIRS-High fully set?

Secretary TEETS. Yes. The Joint Requirements Oversight Council validated the SBIRS Operational Requirements Document (ORD) on January 20, 2002. This document represents the requirements set that the SBIRS system must meet through its unique mix of satellites flying in geosynchronous and low Earth orbits and payloads in highly elliptical orbits on a host platform. The ORD covers the four mission areas that have been assigned to SBIRS elements—missile warning, missile defense, technical intelligence, and battlespace characterization.

Mr. REYES. Will SBIRS-High still complement the Space Tracking and Surveillance System (STSS), formerly known as SBIRS-Low?

Secretary TEETS. Yes, the baseline SBIRS-High program will complement STSS.

Mr. REYES. Since STSS is managed by the Missile Defense Agency, how do you ensure that STSS is coordinated with other space missions and assets, including SBIRS-High?

Secretary TEETS. Several arrangements ensure close coordination of STSS with other space missions. First of all, the STSS and SBIRS High program offices are co-located in order to ensure frequent communication, common access to technical expertise, and sharing of lessons learned. Second, the Missile Defense Agency (MDA) and Air Force utilize a Board of Directors forum, which meets quarterly, to coordinate issues of mutual interest—participants include myself, the MDA Director, the Assistant Secretary of the Air Force for Acquisition, and the Air Force Director of Air and Space Operations. This serves as the primary forum to coordinate STSS support to other space missions beyond ballistic missile defense. Furthermore, General Lord and I have agreed to designate Air Force Space Command's Director of Requirements as the single National Security Space contact for MDA. As such, he will have the responsibility for interfacing with all Air Force program offices and the National Reconnaissance Office to support MDA's mission of deploying an effective, integrated missile defense system. The SBIRS program's "Urgent & Compelling" process and Program Management Board will serve as the model for integration of MDA requirements into the Air Force. This process will ensure their requirements and operational impacts are understood across the space community and that sufficient funding for acquisition, operations, and sustainment is programmed in the budget.

Mr. REYES. Will the Air Force manage the Operationally Responsive Launch program and how long will the Analysis of Alternatives take?

Secretary TEETS. This program, known as Operationally Responsive Spacelift (ORS) is being managed by the Air Force. One of the efforts associated with the ORS program will be a joint technology demonstration effort with the Defense Advanced Research Projects Agency (DARPA) focused on an economical, responsive small launch vehicle. The Program Manager will be a DARPA member and the Deputy Program Manager will be an Air Force member. The Analysis of Alternatives should be completed in early 2004.

Mr. REYES. What is the Small Launch Vehicle program? Is it an FY04 new start program or did it start in FY03?

Secretary TEETS. There is no Small Launch Vehicle program. A small launch vehicle will be studied as a part of the initial demonstration effort of Operationally Responsive Spacelift, an FY04 new start program.

Mr. REYES. Will the Air Force manage the Small Launch Vehicle program?

Secretary TEETS. There is no Small Launch Vehicle program. Small launch vehicles will be studied as a part of the initial technology demonstration of the Operationally Responsive Spacelift program.







